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# 1855/1865

## SERVICE MANUAL

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# INTRODUCTION

The 1855/1865 Sweep Recovery System was designed specifically for broad band cable system sweeping. The microprocessor control provides the user with the capability to program a wide variety of sweep parameters. In addition, digital processing of sweep and TV signal information provides an extremely accurate representation of the frequency response. The result of this use of state of the art technology is sophisticated test equipment that provides quick and easy measurements.

This manual supplies detailed theory of operation, calibration procedures, parts lists, and schematics. It is intended to be used by technically trained personnel for calibration and fault diagnosis.

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SECTION I

# 1855/1865 THEORY OF OPERATION

This section sets forth general and specific information on the principles of operation of the Models 1855/1865 Sweep Recovery System. Reference to the schematic section will facilitate understanding of the detailed individual assembly sections of this chapter.

## 1.1 Model 1855 Transmitter

At power-on, default values of sweep parameters are copied from read-only memory into the random-access memory of the 6802 microprocessor. The microprocessor sends the parameters byte by byte to the Latch Card, which makes them available in parallel to the digital to analog converters on the Ramp Card.

The Ramp Card provides voltages for the M9L-1 Sweep Oscillator. The microprocessor sends sweep parameters (start frequency, sweep width, sweep time, and repetition interval, plus parity and checksum) in serial ASCII to the M135 Phase-Shift Keying Modulator, which generates and phase modulates the 50MHz pilot carrier. The information is made available simultaneously as TTL levels at the TTL output jack on the rear panel of the Model 1855.

After sweep parameters are transmitted, the Model 1855 transmits on the pilot carrier two 100 µsec pulses, designated "pass one" and "pass two", separated by an interval equal to one TV frame (33.3667 msec ±1 µsec for U.S. standards). The RF sweep is activated by the pass-two pulse.

Before the sweep, the start frequency, counted down by M138, is referred to an IC counter on the Microprocessor Card. After the sweep, the stop frequency is counted. The frequency counts are compared to the stored parameter values for F-1 and F-2; frequency and span are corrected as necessary.

The sequence consisting of parameter transmission, pass-one pulse, pass-two pulse, counting, sweep, and counting is repeated at intervals set by the value of the REP/SEC parameter.

Between sweeps the microprocessor scans the keyboard. When a numeric key is pressed, the microprocessor checks a "numeric entry" flag. If the flag is not set, the microprocessor sets the flag, clears the display (turning off parameter identification and units lights), and puts the new digit into the display. If the flag was already set, the microprocessor shifts the number in the display left one place and adds the new digit. If there are three digits to the left or one to the right of the decimal point, numeric keys are ignored.

When a parameter key is pressed, the microprocessor again checks the numeric-entry flag. If it is set, the number in the display is checked against the validity limits. If the number passes, it is stored as the new value of the parameter. If not, the microprocessor flashes the display briefly and then displays the current value of the parameter. In either case parameter identification and unit lights are turned on. If the flag is not set, the current value of the parameter is displayed.

If the flag is set when the CLEAR ENTRY key is pressed, the flag is cleared and the display reverts to its condition before the numeric entry. If the flag is not set, the CLEAR ENTRY key has no effect.

Pressing the CATV/CS key toggles the mode. In Continuous Sweep (CS) mode the interval between the end of one sweep and the beginning of the next is 1 msec. After a time specified by the value of REP/Sec, the unit pauses 50 msec to count then correct start and span frequencies. IF F-1 and F-2 are equal, the unit is put into CW mode. The frequency is counted and corrected at intervals specified by REP/SEC.

## 1.2 Model 1865 Sweep Analyzer

The 50MHz pilot carrier from the Model 1855 Transmitter is demodulated by the M119 Phase-Shift Keying Detector. The 1802 microprocessor stores the sweep parameters.

When the pass-one pulse is received, the Model 1865 activates "HOLD" in the M118 Biased Detector. The analog-to-digital converter begins to convert voltage levels into eight-bit binary numbers, with a range of 0-255 decimal

(256 possible values). The A/D converter is clocked at a rate such that 250 measurements will be made during the sweep.

Successive numbers are stored in consecutive locations of the main display memory. Pass one consists only of the video on the line.

As pass two, video plus sweep, is being received, the numbers in display memory are retrieved at the sampling rate and converted to an analog voltage. This voltage is subtracted from the pass two voltage. The difference is digitized and replaces the pass one voltages in the display memory. The result, to the extent that the video is the same on pass one and pass two, is that the display memory contains only the system response to the sweep frequencies.

After pass two is received the microprocessor inhibits Power Supply boards 2, 3, and 4, removing power from circuits not needed. After a time nearly equal to REP/SEC, the power supplies are disinhibited, readying the circuits for the next sweep.

Between sweeps the microprocessor scans the keyboard and refreshes the display. When the keyboard is found to be indicating a key pressed, the microprocessor identifies the key and after a debouncing confirmation takes appropriate action. Identification of the closed key is skipped as long as any key remains closed. Thus the sequence "hold ↑, hold ↓, and release ↑" will result in the cursor continuing to move upward, since the microprocessor will not check the identity of the closed key until it has found all keys open.

Raster scan of the CRT is bottom-to-top and left-to-right. At horizontal retrace, the beginning of a new refresh, a counter is zeroed. This counter is incremented at each vertical retrace, counting the vertical lines. As an upward scan approaches the baseline of the display, after painting a column of dots in the alphanumeric readout, the line counter is used as a pointer to the display memory. The number in memory (the digital representation of a sample from the M118 Biased Detector) initializes a counter. As the scan crosses the baseline, the beam is turned on and the counter begins to be decremented at a rate such that there are 256 counts by the time the scan reaches a point near the top of the screen. When the counter reaches zero, the beam is turned off. The result is a line whose height is proportional to the detected voltage. As the scan proceeds horizontally, it displays all the 250 sample points.

Cursors are generated in the same way as data display. Each cursor is defined by a position (a number from 0 to 255), and a mode. When ↑ or ↓ is pressed, the microprocessor increases or decreases the value of the position of the active cursor. If a cursor is in LEVEL mode its value initializes one of two cursor counters when the scan crosses the baseline. The counter is decremented at the same rate as the counter containing the sample voltage. When the count reaches zero, the intensity of the beam is enhanced for one dot time. This repeats with each vertical scan resulting in a horizontal row of dots.

For a cursor in FREQ mode the cursor counter is initialized at horizontal retrace and decremented at vertical retrace. When the counter reaches zero, the beam intensity is enhanced for a full vertical scan. The result is a line whose position on the display corresponds to the position of one of the sweep samples.

Graticule lines are generated by discrete logic clocked at the same rates as the counters for data and cursors.

Alphanumeric information is calculated from cursor positions and numbers in display memory. For a cursor in LEVEL mode, the microprocessor uses the cursor position to consult a table containing a piecewise-linear approximation to a logarithmic curve. If the cursor position does not correspond to one of the points in the table, the microprocessor interpolates between points. The microprocessor reads the setting of the ATTENUATION controls before each refresh and adds the value to the result of the table lookup. The result is the absolute line level, in dBmV, of a point at cursor height on the display.

The frequency to which a cursor in FREQ mode corresponds is calculated from

$$F = F\text{-}1 + N(S/250)$$

where F-1 is the start frequency, N the cursor position, and S the sweep width. S/250 is the amount by which the sweep frequency increases from one sample time to the next. The number in memory location N is run through the level calculation, yielding the level of the actual response at frequency F. The use of digital information for display generation and alphanumeric calculation ensures that optical distortions in the CRT give no effect on analysis of the display.

### 1.2.1 AVG Mode

The AVG function is an exponential smoothing operation, replacing a portion of the moving average with the same portion of the most recent input. The calculation operates on each sample value in B (auxiliary) memory, replacing the value with a value equal to 0.75B + 0.25A where B is the value in B memory (from the previous average) and A is the value in A memory (from the most recent sweep).

As a numerical example, suppose that the sample voltage at a particular frequency has been 25mV for some time. When AVG is pressed, the A memory is copied to the B memory. As long as the sample voltage at the frequency does not change, the averaging is:

$$0.75B + 0.25A = 0.75\ (25) + 0.25\ (25) = 18.75 + 6.25 = 25$$

and the average does not change.

If the sample voltage at the frequency jumps to 28mV, the average begins to follow the change.

After the first sweep following the increase, the updating is:

$$0.75\ (25) + 0.25\ (28) = 18.75 + 7.00 = 25.75$$

After the next sweep the average becomes:

$$0.75\ (25.75) + 0.25\ (28) = 19.31 + 7.00 = 26.31$$

By the tenth sweep after the increase the average has risen to 27.83mV. (See Figure 4-2.) If on the eleventh sweep the sample voltage returns to 25mV, the averaging is:

$$0.75\ (27.83) + 0.25\ (25) = 20.87 + 6.25 = 27.12$$

On the twelfth sweep:

$$0.75\ (27.12) + 0.25\ (25) = 20.34 + 6.25 = 26.59$$

By the twentieth sweep after the original increase the average is down to 25.16mV.

## 1.3 Model 1855 Transmitter Individual Assemblies

### 1.3.1 Front Panel Board

The front panel board contains the keyboard and LED displays. The keyboard consists of Hall-effect switches, each of which contains an IC to achieve bounceless levels. When the microprocessor wants to scan the keyboard, it lowers P101 pin 9, KEYS, enabling IC107 to pass address levels via closed keys to the data bus.

DS101 through DS104 are seven-segment LED's, which are driven by decoder/driver/latches IC103 through IC106 respectively. Latches are loaded in pairs; the microprocessor puts two four-bit bytes on the data bus, and lowers P101 pin 7, DISPØ, to load them into IC103 and IC104, or P101 pin 8, DISP1, to load IC105 and IC106.

Parameter indicators CR103 through CR115 are lit by Q101 through Q109, driven by bits from hex D flip-flops IC101 and IC102. LATCHØ loads IC102 loads IC102; LATCH1 loads IC101. Both "F-1" and "F-2" light "MHz" via CR101 or CR102. Q110 lights the decimal point.

### 1.3.2 Microprocessor Card

The Microprocessor Card contains the microprocessor, read-only memory (ROM), support, and interface circuitry.

The microprocessor, IC201, is a 6802. X201 is the 4MHz crystal. The E output, IC201 pin 7, is a 1MHz system clock. J203 brings the E output to the bus if it is needed for an option. (J203 should not be installed if it is not required.)

The 6802 contains 126 bytes of random-access memory (RAM) on the chip; 32 of these retain data when main power is removed, if +5V is applied to pin 35. These locations are used in the Model 1855 to hold sweep parameters. The optional M152 Battery Backup supplies the holding voltage. DIP JUMPER 204 may be replaced with a plug wired to manipulate the data bus for test purposes.

IC203 and IC204 are one of eight decoders. A combination of bits on selector pins 1, 2, and 3, in conjunction with the VMA (Valid Memory Address) signal and clock pulse E from the microprocessor, causes one of the output pins to go low, enabling the corresponding IC to interact with the microprocessor.

ROM 0 and ROM 1 contain the program.

IC207 is a Programmable Timing Module (PTM), containing registers which may be used to count frequencies, or, by counting system clock pulses, to produce time intervals. The PTM counts the output of the M138 Counter and reports the results to the microprocessor; it provides pulses for the Serial Data Out to the M135 PSK Modulator; and it times the sweep repetition interval.

IC208 is an inverting input buffer. When it is enabled, the factory-set wiring of DIP JUMPER 206 gives to the microprocessor a correction factor for the frequency of X201. This results in more stable operation than pulling crystal frequency with a trimmer capacitor.

IC213 and IC214 are three-start buffers for address lines. IC212 is a bi-directional, three-state buffer for the data bus. IC212 through IC214 are enabled when all the lines on IC110 are high.

IC209 with associated circuitry is a power-on reset and power-failure monitor. At power on while the +9V unregulated is below the voltage necessary for +5V regulator IC211, IC209A pin 1 is low. Q202 conducts, holding IC209 pin 5 and RESET low. When the +9V reaches the threshold, A202 is cut off, allowing C212 to charge through R220. After about 0.1 seconds RESET goes high, allowing the microprocessor to proceed.

If the optional M152 Battery Backup is installed and turned on when the +9 falls below the threshold, Q202 is turned on, discharging C212 and bring RESET low immediately. C210 and C211 keep the main +5V up long enough to allow the microprocessor to power down gracefully. A fully-charged M152 will keep the sweep parameters in RAM for about 24 hours.

When the +9V again exceeds the threshold, Q202 again holds RESET low for 0.2 seconds. When RESET is released, the microprocessor calculates a checksum from the sweep parameters in its RAM. It compares this with the RAM checksum that is calculated when a parameter is changed. If the two checksums do not agree, the microprocessor loads the default parameters from ROM.

### 1.3.3 Latch Card

The Latch Card takes data from the Microprocessor Card and makes them available to the Ramp Card.

Address lines from the microprocessor, in conjunction with enable line E8, select one of the latches IC402 - IC408 to hold the byte from the data bus.

When the microprocessor has signaled RAMP DOWN in Continuous Sweep mode, ZERO from the Ramp Card produces RESET and brings RAMP high. (See Section 1.3.4, Ramp Card, for the use of these signals.)

### 1.3.4 Ramp Card

The Ramp Card contains digital-to-analog converters (DACs) which convert digital information from the Latch Card to analog voltages which control the sweep.

Start frequency is determined by the digital settings of IC513 and IC514. These are programmable current sources; currents are converted to voltages by IC515 and IC516. The two voltages are summed by IC519. The ratios of input and feedback resistances of IC515, IC516, and IC519 are such that the voltage change at IC519 pin 6 due to an increment of current from IC513 is 64 times as great as the change due to the same increment from IC514. Thus each of the 256 steps from IC513 can be divided into 64 parts by adding steps from IC514. The result is that the voltage range is divided into 256 x 64 = 16,284 increments, equivalent to a 14-bit DAC. Dividing the nominal 400MHz frequency range by this value gives 24.4 kHz per increment; the actual frequency range is adjusted so that each increment of current steps the frequency 25kHz.

Sweep time is determined by IC501. The voltage from IC503 is integrated by C505, producing a ramp that rises from 0 to 10V in a time determined by the magnitude of the current. The output of IC501 is logarithmically related to the binary input, to compensate for the non-linear relationship between the magnitude of the current and the charging time of C505.

IC504 and IC505 determine frequency span. These DACs are linked in the same manner as IC513 and IC514. The ramp output of IC503 is the reference for IC504 and IC505; the output of IC507 is the ramp voltage multiplied by the binary fraction on the input pins of the DACs. In other words, the DACs divide the reference into 16,384 increments, and output as many increments as the binary programming needs. The reference is a ramp from 0 to 10V; the output is a ramp from zero to some lower voltage.

The ramp voltage is added to the start voltage in IC519. The resulting ramp causes the M9L-1 Sweep Oscillator to sweep from the start frequency to the start frequency plus the span.

Assume that a voltage of 0V on the sweep oscillator produces a frequency of 0MHz, and that 10V produces 400MHz. Then sweeping from 50 to 250MHz requires a voltage sweep from 1.25V to 6.25V. The START DAC outputs current to produce 1.25V; the SPAN DAC divides the 0-10V ramp to 0-5.0V. The sum of the two outputs is a ramp from 1.25-6.25V.

At the end of each sweep the microprocessor brings RESET high. (This is not the same as RESET on the microprocessor card.) The analog switch between IC502 pins 2 and 3 opens and C505 holds its voltage while the stop frequency is counted.

At the end of the sweep in CATV mode, the microprocessor raises the BLANKING line via IC404 pin 11 of the latch card cutting off the sweep output. RAMP is asserted, closing the analog switch between IC502 pins 6 and 7. C505 discharges, ready for the next sweep. In Continuous Sweep (CS) mode the microprocessor signals RAMP DOWN rather than RAMP at the end of the sweep, closing the switch between IC502 pins 14 and 15. This puts a negative voltage on IC503 pin 6 causing C505 to discharge in 1 msec. The frequency ramps down to the start, producing a baseline for an oscilloscope display.

When the ramp voltage falls below the 0.15V, established by R527 and R530, ZERO goes low, causing IC410 on the latch card to send RAMP low, discharging C505. This prevents the sweep voltage from going negative.

In CW mode the RAMP is low, closing IC502 pins 6 and 7. No integrating occurs, so there is no ramp, and the output frequency remains constant. IC511 and IC512A provide a voltage which biases PIN diode attenuators in various modules to provide the proper output level.

IC512B adds a small amount of sweep voltage, variable by the TILT control, to the LEVEL program to change the amplitude as frequency changes.

### 1.3.5 M9L-1 Oscillator-Mixer

The M9L-1 produces the RF sweep output. The module contains two UHF oscillators sweeping in opposite directions. The difference between their frequencies is the output.

The oscillator formed by Q2 sweeps from 1550 to 1750MHz. The bias on the anodes of voltage-variable capacitance diodes CR1, CR2, and CR3 is adjusted by R3 to achieve proper calibration. The sweep voltage from the ramp card is applied to the cathodes of the diodes. The diodes associated with Q10 are reversed, and the polarity of the bias voltage is opposite, so the sweep is from 1550 down to 1350MHz.

The sweeps are combined in a single-balanced diode mixer composed of L4, L11, CR4, and CR5. The difference frequency, 1 to 400MHz, is amplified by Q3, Q5, and Q6.

This double-acting sweep allows greater frequency range, and achieves partial cancellation of nonlinearities in the frequency-versus-voltage characteristics of the oscillators. R9 maximizes this cancellation by varying the drive ratio between the two oscillators.

In CW mode, a voltage is applied to pin 7 of the module, turning Q14 on and connecting C34 and L13 to ground as a series filter on the DC control line.

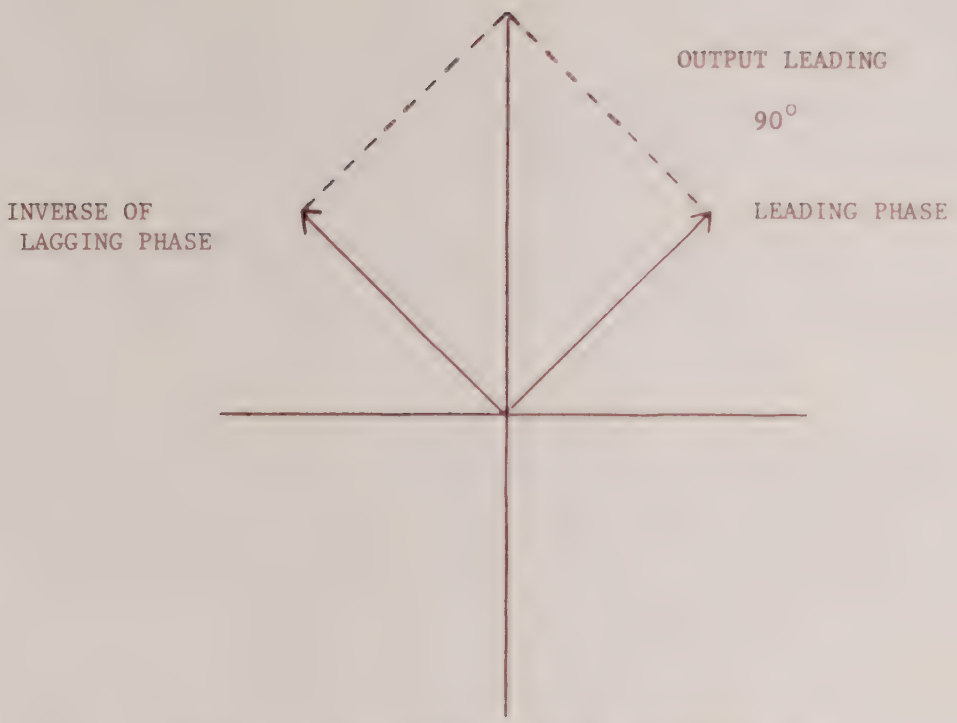



Figure 1-1. M135 OUTPUT LEADING REFERENCE 90°

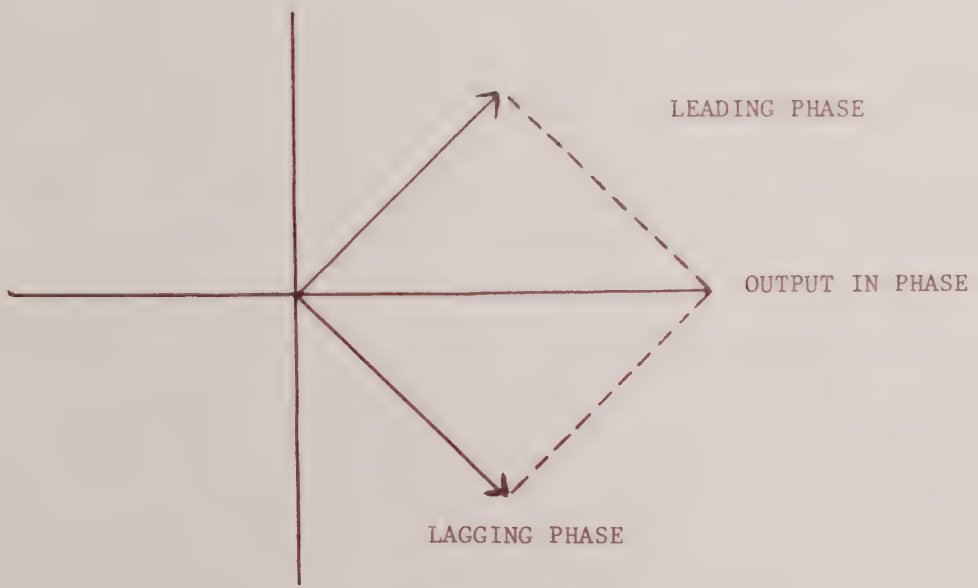



Figure 1-2. M135 OUTPUT IN PHASE WITH REFERENCE

### 1.3.6 M135 PSK Modulator

The M135 generates the 50MHz pilot carrier and shifts its phase 90° when so ordered by serial data from the microprocessor board.

Q5 and X1 generate the 50MHz carrier. One output of hybrid splitter T1 goes to a low-pass filter, L10 and C26; the other output goes to a high-pass filter, C14 and L13.

The output of the mixer is linearly combined with the leading phase from the low-pass filter. When the TTL level is high, the lagging phase is combined with the leading phase, giving a signal that is in phase with the reference; when the TTL level is low, the inverse of the lagging phase is used, resulting in an output that leads the reference by 90°.

Figures 4-1 and 4-2 show vector diagrams for this process. The phase-modulated signal is amplified by Q6. Level control is provided by IC1. A sample of the signal is rectified by CR2 and CR3, and compared with the level voltage from the analog card. The difference voltage produces a current which biases PIN diodes CR4 and CR5, providing proper attenuation for the signal.

### 1.3.7 M138 Loop Counter

The M138 divides the sweep frequency by 160, passing the output to the programmable timing module (PTM) on the microprocessor card.

The RF input is clamped by forward-biased diode bridge CR1 through CR4. IC2 is an ECL prescaler, dividing by 10. IC3 divides by 16.

### 1.3.8 DPS10 Power Supply

S1 is the rear-panel line voltage switch, connecting the primaries of T1 in parallel for 115 VAC or in series for 230 VAC.

The ±18V supplies are regulated by power Darlingtons Q3 and Q4. IC1 provides the reference for the +18 supply.

If the output voltages starts to drop, the voltage at IC2 pin 2 falls. The difference between IC2 pins 3 and 2 increases, so the output of IC2 increases. More current flows into the base of Q3, turning it on harder and decreasing the voltage drop. Q1 supplies current limiting.

The -18V supply is referenced to ground; the feedback circuitry attempts to keep the wiper of R8 at zero volts. This allows the two supplies to track with temperature.

The +9V unregulated is taken from P1 pins 3 and 4. The +9V supply from P1 pins 1 and 2 are used only if options are installed which require unusual amounts of current. P2 pin 5 is connected to P2 pin 7 in order to take advantage of the filtering available from C10.

CAUTION

When the unit is shipped, one of the blue wires from power transformer T1 is connected to J1 pin 9, as shown on the schematic. P1 has only seven pins, so this wire floats. The wire should not be moved to J1 pin 1 unless the factory so advises. If the extra current is not needed, the increased voltage from the 9V supply might cause the Model 1855 to overheat.

### 1.3.9 M113 Selective Blanking Option

The inverted combined program at module pin 2 is the sum of the offset and ramp voltages from the ramp card. It sweeps from +10V to -10V, and is biased at the junction of R2 and R3 by the voltage from R4. When the biased sweep voltage is above the 9V reference at IC1A pin 5 (from the junction of R5 and R6) the output of IC1A is low. The output of IC1B is high. Q1 is off, so Q3 is off, and the blanking voltage at module pin 3 is zero. As the sweep voltage (biased by R4) falls, the output frequency rises; when the sweep voltage falls below the level set by R5/R6, the output of the IC1A goes positive, turning Q1 on. Q3 turns on, and module pin 3 goes to about +17V. Thus, R4 sets the lower edge of the blanking interval.

When the biased sweep voltage reaches the level set by R8, the output of IC1B goes low, turning Q1 and Q3 off, returning the blanking voltage to zero.

The operation of the second blanking interval is identical. R13 sets the leading edge of the interval; the trailing edge is set by R8.

## 1.4 1865 Receiver Individual Assemblies

### 1.4.1 M117 Amplifier/Programmable Attenuator

The M117 amplifies the RF input and supplies part of the attenuation called for by the front-panel controls. The two wide-band amplifiers, consisting of Q101 through Q104 and Q201 through Q204, are identical, each providing approximately 24dB gain, flat to 400MHz. (450MHz for B units.)

Attenuators of 0, 10, or 20dB may be inserted between the amplifiers by applying voltages to module pins. The 0dB path is selected by applying a TTL high voltage to IC402 pin 3. Pin 2 is biased to approximately +3 volts by R407 and R408; when pin 3 is low, this positive voltage on the inverting input drives the output negative, reverse-biasing CR302 and CR305. A high on pin 3 drives the output positive, turning CR302 and CR305 on, allowing DC current with RF superimposed, to flow.

A high on the 10dB line, IC401 pin 3, turns on CR301 and CR304, allowing current to flow through R308, which, in conjunction with R306 and R307, forms a 10dB pi-section attenuator. The 20dB attenuator, R311, R309, R310, is switched in a similar manner. The front-panel switching is such that only one path at a time is selected.

The RF input to the Model 1865 goes first to the 1-10dB turret attenuator behind the front panel, then to the 10-70dB turret. When this turret is set to 0, 10, or 20dB it programs the M117 for that attenuation and feeds the signal directly to the module. At higher settings the attenuation of the turret is 20dB less than the setting; the attenuation in the M117 stays at 20dB, maximizing the signal to noise and dynamic range of the two amplifiers.

### 1.4.2 M118 Differential Biased Detector

The M118 detects the incoming RF signal from the M117 programmable attenuator. T1 converts the 75ohm unbalanced input to 75ohm balanced, and provides a tap output.

Where there is no input, IC1 pin 2 is biased near zero. On negative half cycles current flows through R3 and CR2, charging C2. On positive half cycles current flows through CR1; C2 discharges, adding its current. The resulting change of bias causes the output of IC1A to go negative. Negative half-cycles are treated similarly by the circuitry leading to IC1B pin 6. The diodes are biased in the linear portions of their characteristic curve.

The negative-going output of IC1A is algebraically subtracted from the positive-going output of IC1B in differential amplifier IC2A. The output of IC2A, always positive, is amplified by IC3 and IC4, which are connected as a low-pass amplifier which prevents the signal from changing too fast for the A D converter (on the A-D/data memory card).

The output level, divided in half by R37 and R36, is fed to the comparator, IC2B. IC2B pin 5 is biased at 0.9 volts by R35. When the HOLD pulse is absent IC5 pins 2 and 3 are connected, feeding the difference between the output and the 2V reference back to IC2A, through Q3 and Q2. When the HOLD pulse arrives from the A/D card the switch between IC5 pins 2 and 3 is opened. C12 holds the feedback constant; the output is now added to the 2V bias level.

When S1, a mechanical switch on the module housing, is in manual, the switch between IC5 pins 14 and 15 is opened, removing the feedback entirely. This allows the balancing of IC2A by means of R23.

### 1.4.3 M119 PSK Detector

The M119 recovers sweep-parameter modulation from the 50MHz phase shifted carrier.

The 50MHz carrier is filtered from the sweep by a band-pass amplifier consisting of Q101 and Q102. The output is mixed in MX1 with the output of the 46.42MHz voltage-controlled oscillator (VCO), which consists of Q201 and associated circuitry. CR201, a voltage-variable capacitor, resonates with L203 and L204.

The 3.58MHz output of MX1 is amplified by Q301 and IC301. The gain of the combination is greater than 60dB, resulting in a saturated output even for low input level. This is limited to TTL levels by Q302. The square-wave output of Q302 is one input to the phase detector, IC203; the other input is the 3.58MHz reference frequency from the timing card.

As the carrier phase begins to shift in a leading direction, the phase detector raises its output voltage, amplified and filtered by IC303A, which tends to raise the frequency of the VCO. As the VCO frequency begins to increase its cycles arrive earlier, causing the phase difference between the VCO and the input carrier to approach its previous value. This brings the phase-detector output voltage toward its previous value. The VCO thus returns to its previous frequency, but it is now shifted forward in phase to keep up with the carrier. A lagging shift in carrier phase has the opposite effect.

These pulses in the phase-detector output voltage are amplified by IC303B. Positive-going pulses are steered by CR302 to pin 2 of flip-flop IC304; negative-going pulses are steered to IC304 pin 6.

At power-on, IC304 pin 11 may latch either high or low. Assume it to be low; then pin 4 is high. Pin 1 is tied high; pin 2 is low, so 3 is high. Pins 12 and 13 are both high, holding 11 and 5 low. A positive-going pulse brings pin 2 high for a short time. Pin 3 goes low, driving pin 11 high. Pins 4 and 12 go low, holding pin 11 high. When pin 11 is high, a positive pulse has no effect because pin 12 is low, and pin 13 has no effect on pin 11.

When pin 11 is high, a negative-going pulse is steered by CR303 to IC304 pin 6, bringing pin 4 high. Pin 13 is high, so pin 11 latches low.

### 1.4.4 Model 1865 Vertical/Horizontal Timing Card

The vertical/horizontal timing card supplies sync pulses and video information to the CRT.

Most timing functions are controlled by the timing control PROM, IC102. The vertical counter, consisting of IC101, IC103, and IC104, is set to zero during

the vertical sync pulse, and incremented by the 7.16MHz clock, IC118. Outputs from the counter are connected to the address lines of the PROM, selecting a new location with each clock tick. Output lines from the PROM go to latches IC105 and IC106. The latches are loaded by pulses from the 7.16MHz clock; inputs from the timing control PROM appear at latch outputs one clock pulse after they appear at the inputs to the PROM.

Outputs from the latches are used as system control signals. Each locations in the PROM contains a binary number whose bit pattern consists of the logic levels necessary to put the system into the proper state at each clock time.

The vertical sweep of the beam may be divided into three parts: dead time during which the beam is always off; alphanumeric, or A/N time, during which alphanumeric characters are painted on the screen; and display time, during which data, cursors, and grid lines are produced.

The Vertical clock begins to count at the end of the vertical sync pulse. The first fourteen ticks are dead time, allowing the beam to clear the bottom of the screen.

Line 4, A/N character, defines A/N time. It goes high at time 15 and is made available on the complementary output of the latch as ALPHA CHARACTER. Line 3, 1st ALPHA CHARACTER, goes high at the same time, switching the character selector, IC120 and IC121, to the inputs for the character for the display line labeled "M2" or "M2-M1". The two characters for the current sweep are held in latches on the control register card.

Characters are defined on a 7 x 7 dot matrix. Locations in the character generator PROM contain the bit patterns to generate dots (beam on) and no dots (beam off) to paint one column of a character. Each character is allocated eight locations; the eighth column of each character and the eighth position of each column are no dots, to provide spacing between lines and characters.

The character comes from the latches as a six-bit ASCII representation, which is used as the high-order portion of the nine-bit address of the character generator, selecting a block of eight columns. The lower three bits are

supplied by the column selector, IC116. This counter is loaded by the horizontal sync pulse or by its own overflow. It is clocked by the vertical sync pulse. The load value is 8 (decimal); since only the three low-order output bits are used, counting from 8 to 15 is equivalent to counting from 0 to 7.

The bit pattern for the selected column goes to row selector IC117. This is a one-of-eight data selector enabled by ALPHA-CHARACTER. A bit is selected by bits 1, 2, and 3 or the vertical counter. Since bit 1 of the counter toggles at half the clock rate, each dot is two clock ticks high.

The output of the row selector is inverted by IC113 becoming ALPHA-NUMERIC OUT, which drives the base of Q102. When ALPHA-NUMERIC OUT is high, the PNP transistor is off; when the line goes low, the transistor turns on causing current to flow to the video drive circuitry of the CRT module. R118 controls the current through Q102, hence the relative brightness of the alphanumeric portion of the display.

1st ALPHA CHARACTER goes low at time 31, selecting the character for line M1. Character generation is the same. The column selector is incremented by the vertical sync pulse; when it reaches its maximum count, the ripple-carry output goes high, reloading the counter and requesting the microprocessor to load two more characters into the latches.

A/N time ends at time 47 when A/N CHARACTER, output 4 of timing control goes low. ALPHA-CHARACTER goes high disabling IC117. Its output goes low sending ALPHA-NUMERIC OUT high, and holding Q102 off. IC117 continues to select rows of the current column, but they have no effect on the output.

Display time begins at time 47 when line 1, INTENSITY PROM ENABLE, goes high, the complementary output of the latch goes low, selecting the intensity control PROM, IC100. The other select input is connected to the complement of HORZ RETRACE and is active except during horizontal retrace.

Address inputs to intensity control are status lines (dot/line display, LEVEL/FREQ for each cursor, and requests for display of data, cursors, and grid lines.) Each location contains a bit pattern which turns on one (and only one) of the intensity-control transistors Q101 and Q103 through Q109. The logic that generated the bit patterns in the PROM established precedence as follows: If a cursor is requested at the same time as grid or data (i.e. for the same point on the screen) one of the cursor transistors (depending on cursor mode and display) is turned on, rather than grid or data transistors. Grid requests take precedence over data requests. The use of separate transistors for various combinations of display mode and cursor mode allows relative brightness of display elements to be adjusted for best display readability. Display time ends at time 305 when line 1, intensity control, goes low. Line 7 goes high at time 321, beginning the vertical sync pulse, and goes low at time 457. At time 456 a one-count pulse is produced which resets the vertical counter.

Horizontal sync is produced by the horizontal counter, IC107, IC108, and IC109, which is clocked by the beginning of the vertical sync pulse. The counter loads with a value of 5, so it is 251 counts (251 lines) later that it reaches 256 (decimal). On the next count IC109 pin 14 goes high, producing HORZ RETRACE at IC113 pin 2. IC107 is at a count of 1 at this time; when it reaches 9, 8 lines later, IC119 goes low, loading the counter and bringing HORZ RETRACE high again.

Horizontal grid lines are produced by line 6 of timing control, which produces a one-count pulse each 32 clock ticks during display time. When HORZ RETRACE is inactive, i.e. high, IC114 pin 4 is high. IC114 pin 5 is normally low, so IC114 pin 6 is high. IC112 pin 15 is normally low, so IC119 pin 11 is high. Thus both inputs of IC114 pins 12 and 13 are high, and IC114 pin 8 is high, so IC113 pin 8 is low. When GRID goes high, IC114 pin 6 goes low sending IC114 pin 11 high. IC114 pin 10 is high when IC101 pin 14 is low, every other clock pulse. IC101 pin 14 is the low-order bit in the clock time, so it is high on odd counts. The counts on which line 6 is high are odd, but the level appears at the output of the latch one clock pulse later, by which time IC101 pin 14 has gone low. Thus IC114 pin 3 is high. IC114 pin 8 is low, and IC113 pin 8 is high, requesting a grid output from intensity control.

Vertical grid lines are produced by the horizontal grid counter, consisting of IC111 and IC112. When HORZ RETRACE is high, the complement from IC113 pin 6 holds the A input of IC112 and the D input of IC111 low. All other inputs are tied high; the result is a start count of 231 (decimal). When the count, clocked by vertical sync, reaches 255, IC112 pin 14 goes high. When DATA LOAD goes high at the start of display time, IC119 pin 11 goes low, thus sending IC114 pin 11 high. On alternate clock counts IC114 pin 3 is high producing a series of pulses at IC114 pin 8, hence at the grid input to intensity control. The vertical line is chopped to make it comparable in intensity to the horizontal grid lines, which are also composed of dots. DATA LOAD goes low at time 303, shutting off the pulses. Counting from 321 to 255 produces a vertical line every 25 sweeps.

Production of grid lines is inhibited while HORZ RETRACE is low. IC113 pin 6 is high, forcing the reset of IC111 and IC112 to 255 (decimal). IC110 pin 9 is low so IC110 pin 10 is low, holding the counters at load. IC112 pin 15 is high, since the counters are at their maximum count.

When HORZ RETRACE goes high, the load value of the counters goes back to 232 (decimal). This value does not appear at the output until the next vertical sync pulse, so IC112 pin 15 is still high, holding IC110 pin 10 low and holding the counters at load. The display is now enabled so a line is produced during the time DATA LOAD is high. At the next vertical sync pulse the load value of 231 appears on the outputs of the counters. IC112 pin 15 goes low and counting resumes.

Cursors are produced by cursor generators IC126 and IC127 (for M1) and IC123 and IC124 (for M2). Cursor mode selectors IC125 (for M1) and IC122 (for M2) are four-of-eight data selectors which connect appropriate load and clock signals to the counters. When M1, for instance, is in LEVEL mode, the latch on the control register card holds IC125 pin 1 low, selecting the A inputs. DATA LOAD, line 5 from timing control, becomes DATA LOAD at the complementary out of the latch. In LEVEL mode this signal loads the counter with the value from the cursor 1 latch on the control register board. IC126 and IC127 are incremented by the vertical clock; when they reach 255 (decimal), IC127 pin 15 goes high for one tick, requesting a dot as part of the horizontal cursor. At the next

clock tick the counters overflow to zero and continue upward, but this is irrelevant, since only the output from IC127 pin 14 is used, and the counters are reloaded at the beginning of the next sweep.

The B inputs to the mode selectors are used for FREQ mode. Counters are loaded by HORZ RETRACE and clocked by vertical retrace. When the count reaches 255 (decimal), IC127 pin 15 goes high for one count, that is one sweep, producing a cursor request which will be honored while intensity control is enabled.

### 1.4.5 Control Register Card

The control register card contains latches which hand off data and status information to the vertical horizontal timing card. It contains circuitry to provide the variable clock for the A/D-data memory card, and provides signals for LINE and DOT modes to the timing card.

A pair of latches is selected by one of the I/O select bits N0, N1, or N2, in conjunction with address bit A0. To address IC201 and IC202, for example, the microprocessor executes the "Output to Port 1" instruction. N0 is high when MRD goes low. IC216 pin 3 goes low, activating one of the enable inputs on the latches. The other enable is connected by A0, which was set during the Fetch portion of the cycle when the byte to be output was read from memory. Thus it is seen that the number for cursor 1 must be stored in an even-address memory location, so that A0 will be low. Cursor 2 is set by outputting to port 1 from an odd location. Writing to port 2 from an even location enables IC205 and IC206 and so on. Timing pulse TPB strobes the byte into the latches.

A four-bit byte in IC212 sets the timing factor for the variable clock. This number presets IC214, which counts up to 15 (decimal). While the count is less than 15 the ripple-carry output, IC214 pin 15, is low, causing flipflop IC213 to hold its present state. The the count reaches 15, RC goes high, allowing IC213 to toggle on the next clock pulse. Thus IC214 times halfcycles of a symmetrical output from IC213.

A data line or dot on the display is produced by loading a value from RAM into latches IC223 and IC224. This is accomplished via Direct Memory Access (DMA), as follows: HORZ RETRACE is high during display generation, VERTICAL SYNC goes

low at the end of the upward sweep, sending IC220 pin 6 high. At the end of the vertical sync time VERTICAL SYNC goes high, sending IC220 pin 6 low, clocking a high level to the Q output of IC221. IC210 pin 4 is high, so DMA OUT goes low, requesting a DMA output from the microprocessor. The microprocessor has an interval address register which points to the location of the next data value. This address is put on the address bus and MRD is brought high low, putting the byte on the data bus. This is the value from a conversion by the A-D/Memory board of an output from the M118 biased detector. When the microprocessor has done this, it sets S1 (P3-19) high and S0 (P3-17) low, indicating a DMA state. This combination clocks the data value into latches IC223 and IC224, and resets IC221.

DATA LOAD from the timing card holds counters IC222 and IC225 at LOAD while the CRT beam is painting characters. When the DATA LOAD goes high, control of the beam passes to data circuitry. IC222 and IC225 begin to count down from the load value given them from data memory. When the count passes through zero, RC (IC222 pin 15) goes low for one count. DOT DATA (IC220 pin 11) goes low, signalling the intensity control PROM on the timing card to turn the beam on for one count, its DOT mode is in effect.

### 1.4.6 1865 Microprocessor Card

The microprocessor card contains the microprocessor, support and interface chips.

The microprocessor is a CDP1802DC, an eight-bit statis CMOS part. With two exceptions, pins designated active high (no bar) are inputs. The exceptions are MRD and MWR. (The data bus is bidirectional.)

A sixteen-bit address is put on the eight-bit-wide address bus as two eight-bit bytes. Timing pulse TPA is raised when the first byte is on the bus; this latches the byte into IC302 and IC303. High-order address bits go to IC301, a one-of-eight decoder, which selects ROM, RAM, or keyboard. ROM2 is installed only if card reader option is installed.

R303 and C301 perform power-on reset.

The test socket (DATA bus ports of microprocessor) normally contains a DIP plug which connects the data bus to the data I/O pins on the microprocessor. When the test plug is substituted for the standard plug, some bits are open pulled up by R308; others are held at ground. The result is that every instruction fetch sees the code for NOP (no operation). This causes the microprocessor to fetch the next instruction, which is also NOP. Continuing, the microprocessor cycles through all the addresses. This feature is used for signature analysis.

IC306 is a universal asynchronous receiver-transmitter (UART), used to convert the serial bits from the M119 PSK Demodulator into parallel bytes.

Information on the six low-order address bits is always made available to the keyboard via IC304. When the microprocessor wants to scan the keyboard, IC301 selects the three-state inverter IC305, which passes levels from closed keys to the data bus.

IC311 and IC312 divide the clock frequency by 372 for the UART.

### 1.4.7 Model 1865 A-D Data Memory Card

The A-D/memory card measures voltages from the M118 biased detector, expressing the results as eight-bit binary numbers which are stored for use by the display circuitry and the microprocessor. On pass 1 the Model 1855 Transmitter sends sweep parameters and a trigger pulse, but no sweep; the Model 1865 measures the voltage of sync and video on the cable. On pass 2, one TV frame later, the sweep is sent. The A-D card subtracts the pass 1 voltage as it measures pass 2; since the sync signals are the same in this frame, and the video nearly the same, the result of the pass 2 measurement is the sweep voltage only.

Pilot-carrier information from the M119 PSK Demodulator comes to IC402 pin 11, and is passed via P7 pin 46 to the UART on the Microprocessor Card. The Q output of the microprocessor has been low between sweeps, holding IC414 and IC415 at LOAD. The load value is the maximum count, so IC414 pin 15 is high, which holds IC402 pin 4, INPUT ENABLE, low. This disables IC410, which provides various clock signals during the conversion.

When the microprocessor has stored the sweep parameters and verified the checksum, it brings Q high. This allows IC412 pin 2 to pass the triggering pulse from the pilot carrier. This pulse is positive-going, so it triggers IC423 at pin 2. This one-shot brings IC414 pin 1 and IC415 pin 1 low for approximately 20 µsec, setting the counter outputs to zero. IC414 pin 15 goes low, raising INPUT ENABLE. The trailing edge of the trigger pulse triggers IC423 at pin 9. The output will stay high for about 80 msec, somewhat longer than one TV frame time. IC410 is connected as a shift register. Pin 1, the CLEAR input, has been low; when it goes high, the variable clock at pin 9 causes the level at the D2 input (pin 4) to pass to the Q2 output (pin 5). This input is the inverse of CC (Conversion Complete), which has been low; the result is that C1, C2, C3, C4, and Q1 go high on successive clock transitions. The upward transition of C3 would clock IC414 and IC415, except that the CLEAR pulse from IC423 is still present. (R426 adjusts the pulse width so that this is the case.) When Q1 (IC410 pin 2) goes low SC (Start Conversion) goes low, signalling the analog-to-digital conversion circuitry to commence measuring the output of the M118.

IC407 is a digital-to-analog converter (DAC) which sinks a current proportional to the binary number on its input lines. IC406 produces a reference current; each of the eight DAC input pins switches a portion of the reference.

Bit 7, the most significant bit (MSB) switches $2^{-1}$, or 1/2 times the reference current; bit 6 switches $2^{-2}$ or 1/4, etc. Bit 0, the least significant bit (LSB), switches $2^{-8}$ or 1/256 times the reference. When all switches are on, the current is 255/256 times the reference.

The voltage from the M118 biased detector produces a current through R403 into the summing node at the inverting input of the comparator, IC408. If the current out of the node into the DAC is greater, the difference flows into the node through R405, putting the node below ground and causing the output of the comparator to be positive. If the DC current is less than the M118 current, the difference flows out, and the comparator output is negative. The successive approximation register (SAR) tries each switch in turn, starting with the MSB, and uses the comparator output to decide whether to keep the switch closed or open it. After the eighth increment (switched by the LSB) has been tested, the current into the DAC is the best possible approximation to the current from the M118. (That is, the current through R405 is minimized.)

After the LSB has been tried, the SAR brings CC low, which causes a high level to ripple from Q2 to Q1. C2 locks the binary number from the SAR into the data memory, IC416 and IC417. INPUT ENABLE has been allowing data selectors IC418 and IC419 to send the output of counters IC414 and IC415 to the address lines of the memory. C3 clocks the counters (the CLEAR from IC423 no longer objecting), and Q1 lowers SC to start the next conversion.

The SAR uses negative-true logic (0 = true, 1 = false); the I output of the SAR is used so that the current will behave correctly. The memory input drivers, portions of IC402, IC413, and IC422, invert the data from the SAR, so that the number is stored as positive-true.

After 256 conversions have been made IC414 and IC415 reach maximum count. IC414 pin 15 goes high bringing INPUT ENABLE low, which disables IC410. IC414 is clocked at pin 15, but PASS 1 is low, so the high of EF2 does not change.

The circuitry is now quiescent until the pass 2 trigger pulse arrives. When the trigger pulse arrives, the action proceeds as for pass 1, except that IC414 pin 3 clocks the high on pin 5 to pin 1, making PASS 1 high. This removes the CLEAR from latches IC403 and IC404; each time CC goes high the number from the memory location addressed by IC414 and IC415 is strobed to the inputs of the subtraction DAC, IC405. IC414 and IC415 point to the location into which the new conversion value is to go; the value currently in that location is the measurement from the same point in time during pass 1. This pass 1 value stays on the inputs of the subtraction DAC throughout the conversion. The subtraction DAC sinks a current due to the sweep voltage to be approximated by the PASS 1 DAC.

When the count reaches 256, IC414 pin 15 again goes high. This clocks IC424 at pin 11, sending the high on PASS 1 to pin 12. This is the Q output, so the high appears as a low, which is sent to EF2, one of the External Flag pins on the microprocessor. The microprocessor checks the status of this pin periodically; when it is low, the microprocessor brings its Q output low. This resets both halves of IC424, bring PASS 1 low and EF2 high, ready for the next sweep.

If the pass 2 trigger had been lost, IC423 pin 5 would have timed out after 40 msec, and the next trigger pulse would have been properly interpreted as pass 1.

### 1.4.8 CRT

The CRT module is a Motorola M1000-155 with modifications. The major change is the removal of the horizontal oscillator, since horizontal timing is done on the horizontal/vertical timing card. The deflection yoke is rotated 90° counterclockwise, to orient the raster scan properly.

R21, C47, and Q13 form a slow-turn-on circuit for the CRT filament. At power-on C47 has no charge, so the gate of Q13 is at ground and no current flows. As C47 charges through R21, Q13 gradually increases the filament current.

### 1.4.9 Power Supplies

Voltages other than +12 unregulated are supplied by switching regulators. Advantages include high efficiency and the availability of negative polarity and voltages higher than the battery. Refer to the schematic for power supplies 1 and 2. When the square-wave drive is high, Q1 is saturated, so the loss is very low. A magnetic field builds up around L1; C1 charges toward the battery voltage. When the drive goes low, Q1 cuts off. The collapsing magnetic field around L1 tries to keep the current flowing; this current flows through CR1. The discharge of C1 contributes current to the load. Output voltage is controlled by varying the duty cycle of the drive, and is set for +5 V.

The square-wave drive in the Model 1865 power supplies is provided by IC2. This special-purpose IC contains an oscillator whose frequency is controlled by C5 and R17 on cards 1 and 2, and a pulse-width modulator. The square wave from the oscillator is converted to a triangular wave, which is compared with the control voltage on IC2 pin 6. The output is high while the triangular wave is higher than the control voltage, low when the triangular wave is lower. Thus a higher voltage on pin 6 results in a shorter duty cycle on the output and a lower voltage from the regulator.

The output voltage is fed to IC1A pin 3, where it is compared with the reference voltage from IC2 pin 9, buffered by IC1B. If the load current increases, the output voltage decreases and the voltage on IC2 pin 6 decreases, increasing the duty cycle of the drive.

When the inhibit line is high, Q2 conducts bringing IC2 pin 14 low and shutting off the drive. The filter capacitors discharge, and the output voltage drops to zero.

C3, R9, Q1, and associated diodes form a "soft-start" circuit. When power is applied, C3 charges through R9 and CR3. As the decreasing current through R9 brings the voltage on IC2 pin 6 down from 12 volts, the output current increases proportionally.

When the voltage on pin 6 drops below the voltage on IC1A pin 1, CR1 conducts and CR3 turns off. The feedback is now in control of the output. When the inhibit line is brought high, the low voltage on the collector of Q2 turns Q1 on, discharging C3, ready for the next start.

Power supply card 3 provides a voltage higher than the supply (+20V). When Q1 conducts, current flows from the battery through L1 and Q1 to ground. When Q1 cuts off, the collapsing magnetic field of L1 forces current through CR1, charging C1. The voltage on C1 is determined by its capacitance and the amount of charge deposited by the current pulses. CR1 prevents C1 from discharging through Q1 when Q1 conducts.

IC2 pins 11 and 13 are separate outputs of the drive wave. On cards 1 and 2 they are tied together; on card 3 the second output, IC2 pin 13, drives a separate supply. The circuit is similar in operation to the circuit driven by output 1, IC2 pin 11, except that the relation of L2 and CR6 produces a negative voltage at the output (-6V). The output voltage is amplified by IC3B and compared in IC3A with the triangular wave from IC2 pin 8.

(IC2 pin 5 feeds the triangular wave to the internal comparator.) The output of IC3A controls IC2 pin 16, which varies the symmetry of output 2 relative to output 1, providing independent regulation of the second supply.

Board #4 is the same as #3 but set for +15, -15. Power supply #5 is set at 11.5V and provides voltage for the CRT. When the battery voltage is above the regulated level, current flows through CR4 ≅ 1V drop). When battery voltage falls, the regulator takes over putting a floor under the voltage.

IC4A provides low-battery information to the microprocessor. Battery voltage is compared with the reference voltage from IC2 via IC1B. When the battery voltage falls below a level set by R24, the output of IC4A goes high.

When the microprocessor signals low battery or asks for the card reader, it applies a positive voltage to the anodes of CR5 and CR6. Q3 turns on, bringing IC4 pin 7 low. This turns Q4 off, allowing K1 and K2 to switch to pins 16 and 14 respectively. This removes power from the display, and connects the battery to the card reader terminals. (The card reader is controlled by a signal from the control register card, and is not energized by the low-battery signal.)

At power-on, IC4 pin 7 cannot go high until C13 charges through R28 to a voltage higher than the bias imposed on IC4 pin 6 by R29 and R31. This allows time for the regulator to come up to voltage.

## 2.1 Preparation

Prepare the 1855 for calibration by removing the top and bottom covers. The top cover can be removed by unfastening the #8 screw in the middle at the back of the unit. The bottom cover can be removed by unfastening the two rear feet from the unit. Most of the tests can be performed with the transmitter placed on its side with the front panel facing the user; providing easy access to test points and adjustments.

### 2.1.1 Power Supply Voltages

Check power supply voltages on pins 1-4 of M138. See Figure 1 for pin numbering system. Pin 1 is the unregulated +9 or 10 volts from the power supply. Pin 2 is the +5 volts that is regulated in the M138. Pin 3 is +18 volts and pin 4 is -18 volts. The ±18 volts should be adjusted to ±.01 volts using the adjustment pots on the power supply P.C. board. See the top view of the 1855 in the schematic section for the location of the adjustments.

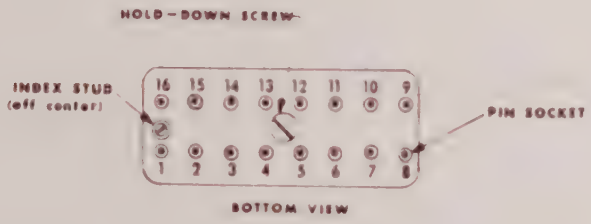



Figure 2.1. Module Pin Numbering System

### 2.1.2 Diagnostic Test Mode

The unit can be put into its test mode by pressing the "CLEAR ENTRY", "." (decimal point), and "CATV/CS" keys in succession, holding all of them until the last one has been pressed. "1855" should appear on the display. When

tests that are made in the diagnostic test mode are completed, pressing the "7" key will return the 1855 to its normal operating reset parameters.

L.E.D. Test

Pressing the "8" key will now activate all of the front panel LED's. This will enable a check of the relative brightness of the LED's and location of LED failures.

Ramp Test

Pressing the "9" key enables a test of the ramp card. There are 6 test points on the ramp card, labeled TP1-TP6. The test points will have the following indications, which should be monitored on an oscilloscope (referenced to ground).

TP1 = +13.5 VDC
TP2 = +13V Ramp
TP3 = +1.5V Ramp
TP4 = +10V Ramp
TP5 = +1V Ramp
TP6 = -10V Ramp

Sweep Drive Adjustment

Pressing "F-1" or "F-2" enables a test of start, stop, and center frequency. The center frequency should be set up first. Press "F-1". Pull the ramp card up out of its edge connectors. The frequency displayed on the front panel can now be adjusted to 200MHz by the "CENTER" pot on the M9L-1. Reseat the ramp card into its edge connectors. Pressing "F-1" will display the start frequency, and pressing "F-2" will display the stop frequency. The start frequency will adjust to 0MHz; the stop frequency will adjust to 400MHz. The width and center pots on the upper right hand corner of the ramp card are used to adjust the end points. The pots affect each other. Press "F-1". Adjust the width pot for a frequency halfway to the objective frequency (0.00MHz). Press "F-2". Adjust the center pot for a frequency halfway to the objective frequency (400MHz). Repeat this process until F-1 = 0.00MHz ±0.5MHz and F-2 = 400MHz ±0.5MHz.

### 2.1.3 Output Level Calibration

Disconnect the cable from the output of the M135 to the M171. Connect the power meter probe to the M135 output. With a +50dBmV front panel output setting, adjust the minimum pot on the M135 for a +40dBmV ±.2dB reading on the power meter. Then change the front panel output setting to +60dBmV and adjust the M135 maximum pot for a +50dBmV ±.2dB reading on the power meter. The maximum and minimum pots on the M135 affect each other so repeat the adjustments as necessary. (If there are two or three pilots in the transmitter, flip the dual pilot switch and follow the same adjustment procedure for each pilot module). Reconnect the cable to the output of the M135 module.

Connect the power meter probe to the 1855 RF output connector. Set the sweep repetition rate for 15 seconds. Adjust the "LEVEL PSK" pot on the M171 for an output level 20dB below the output level indicated on the front panel.

Press the "CATV/CS" key. Enter 200MHz for F-1 and F-2. This makes the output a CW signal at 200MHz. Set the 1855 level at +50dBmV. Adjust the "MIN" pot on the M171 for a power meter reading of +50dBmV ±0.2dB. Set the 1855 level at +60dBmV. Adjust the "MAX" pot on the M171 for a power meter reading of +60dBmV ±0.2dB.

### 2.1.4 Horizontal Output

Check the horizontal output on the rear of the 1855 by connecting it to a scope. With the transmitter in CS (constant sweep) mode, (press the "CATV/CS" key) the ramp should be 10V peak and 1ms retrace. The frequency will vary as the sweep rate is changed.

### 2.1.5 Harmonic Output

Check the harmonic output of the 1855 by connecting the RF output to a spectrum analyzer. Start with a CW signal at 10MHz and +60dBmV. Move the signal through the frequency range of the 1855 by holding the " " key. Harmonics should be ≥30dB down from the carrier. Spurs should be ≥35dB down. If these are out of specification and appear to be causing a problem, we recommend the unit be returned to Wavetek. Please call 800-622-5515 for a return authorization number.

## 2.1.6 1855 DIP SHUNT CALIBRATION PROCEDURE

One indication of an improperly cut or uncut dip shunt is a sweep response with a grassy display on the 1865.

1. With the 1855 unplugged, slide off the top cover by removing the single #8 screw from the top rear of the unit.

2. Connect the center conductor of the frequency counter to pin B of the microprocessor card. (Pin A is open, so shorting to this pin will not damage the unit.) The microprocessor card is the plug in card closest to the front of the unit. This card can be damaged by static electricity if removed from the unit, so static safe handling procedures must be followed!

3. The shield of the frequency counter probe should be grounded to the 1855 chassis.

4. Plug the 1855 line cord in, turn the unit on, and allow it to warm up for five minutes.

5. Set the frequency counter to measure 1 MHz and record the error from 1MHz in Hz.

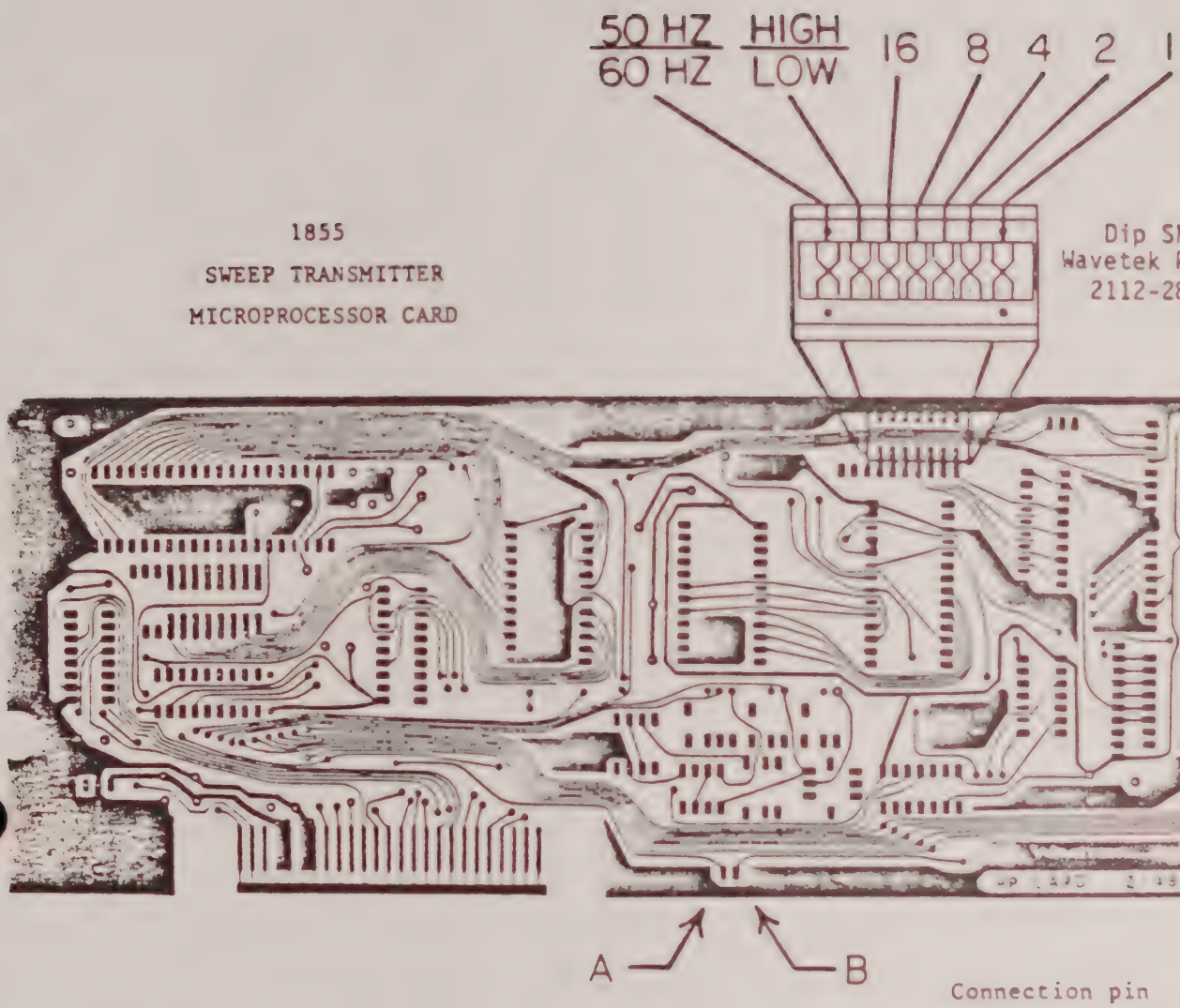
   Example: Count of 1.000053MHz is 53Hz high
   Count of .999994MHz is 6Hz low

Refer to Diagram of Dip Shunt for the following steps.

6. a. (50Hz AC Line Operation)
   If the unit is being calibrated for 50Hz operation, break the jumper marked $\frac{50Hz}{60Hz}$. Divide the error from Step 5 by 25Hz. This result will be used in Step 7.

   b. (60Hz AC Line Operation)
   If the unit is being calibrated for 60Hz operation, leave the jumper marked $\frac{50Hz}{60Hz}$ intact. Divide the error from Step 5 by 30Hz. This result will be used in Step 7.

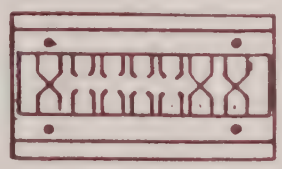
If the result from Step 6 is greater than 16, the 4MHz crystal (X201) or the 27 pf caps (C203, C204) are bad. If the result from Step 6 is less than 16, break the proper "16, 8, 4, 2, 1" jumper such that the jumpers remaining intact add up to the error number from Step 6. If the error was high, break the "$\frac{High}{Low}$" jumper.




Calibration Example:

With the unit set up per Steps 1, 2, 3, and 4, the frequency measured in Step 5 is 87Hz high. The Step 6 calculated error is $\frac{87}{30} = 3$. To calibrate the dip shunt, break the "$\frac{\text{High}}{\text{Low}}$", "16", "8" & "4" jumpers, leaving the "50Hz", "2" and "1" jumpers intact.

Calibrated Dip Shunt:



## 3.1 Preparation

Remove the unit from the cabinet by removing the 16 phillips head screws from the outer edge of the front panel. Push the unit out as far as you can from the rear, through the opening for access to the charging connector. Then grasp the front panel, hook your feet in the cabinet belt and pull the unit the rest of the way out of the cabinet.

Remove the top and bottom covers.

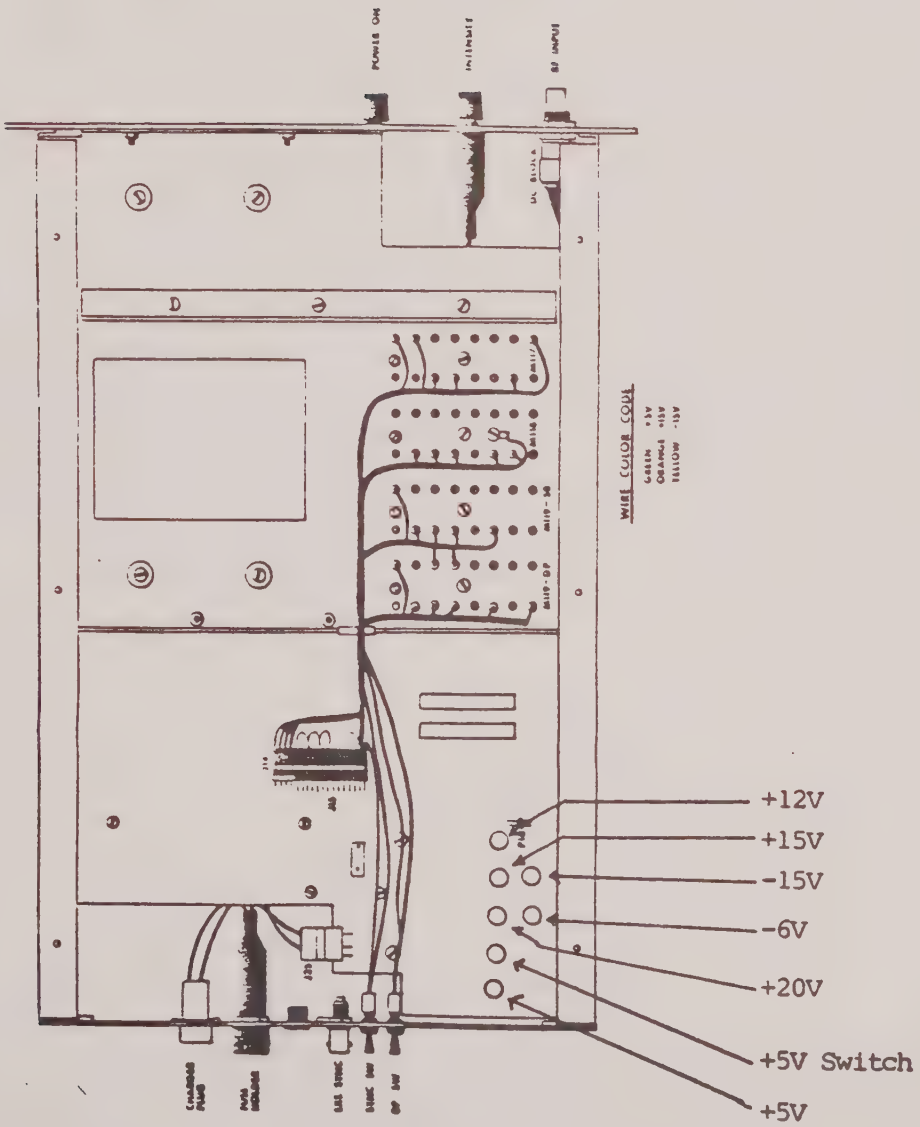
### 3.1.1 Power Supply Adjustments

See the top view of the 1865 in the schematic section for location of power supplies and adjustments. The power supplies are the smaller printed circuit assemblies in the back of the unit next to the battery cavity. The voltages are measured on the bottom of the unit, on the mother board, where the boards plug into the unit. See Figure 5-2 for the location of voltage test points. A voltmeter probe, referenced to chassis ground, can be placed on these points to measure and set each of the following voltages, numbered one through five from back to front. Set the power supply voltages to the following specifications.

Both +5V Adj. to +5VDC ±.05
-6V Adj. to -6VDC ±.05
+20V Adj. to +20VDC ±.10
+15V Adj. to +15VDC ±.05
-15V Adj. to -15VDC ±.05
+12V Adj. to +11.3VDC ±.05

NOTE: As a battery-saving feature, three of the 1865 power supplies power down when not in use. In order to keep the power supplies in the power on mode remove the jumper (J201) on the register card. Be sure to put this jumper back in the same position (to the left) when power supply adjustments are completed. Connect the 1855 RF output to the 1865 RF input and check supplies 2 through 4 to make sure that they power down between triggers.

1865 BOTTOM VIEW



### 3.1.2 Low Battery Adjustment

To keep the battery from going into a state of deep discharge, when the battery voltage discharges to 10.4 volts a "BATT" indication appears in the lower right corner of the display. About one minute after the indication appears the CRT will blank off. This slows the drain on the battery. The low-battery indication voltage is controlled by an adjustment of R24 on power supply number 5. In order to make this adjustment, remove the battery from the circuit by taking out the 4 amp fuse in the back of the 1865. Plug a variable DC voltage supply into the charge connector. Connect a DVM to the positive terminal of the charge connector in order to monitor the variable supply voltage. Put the 1865 in the "HOLD" mode. Slowly decrease the voltage from +12VDC and monitor the CRT display, watching for the "BATT" indication. Adjust R24 so that the "BATT" indication appears when the variable supply voltage is at 10.4VDC.

### 3.1.3 CRT

The CRT display may be centered in the bezel by rotating the two metal rings around the CRT yoke. Vertical display size can be adjusted by tuning L1, the tuneable coil on the high voltage board. For horizontal size and linearity adjustments refer to the CRT schematic to find which pots control which functions. Part of Wavetek's modification of the CRT, to make it fit in our application, is to turn the yoke 90°. For this reason the functions on the CRT PC board designated as vertical are actually horizontal adjustments. The CRT schematic has the proper reference designations and function labels.

### 3.1.4 M119

Check Pin 1 of the M119 (refer to figure 5-1 for pin numbering system) for a DC voltage between -5 and -9VDC. The unit must be in power up mode (input indication on lower right of display) and a pilot present. If the 1865 has a triggering problem and this phase-lock voltage is out of range, please call Wavetek at 800-622-5515 for a return authorization number for either the 1865 or the M119 module.

### 3.1.5 Frequency Adjustment

With an accurate 200MHz CW source summed in at the same amplitude as the sweep from the transmitter, and the transmitter set up to sweep from 180 to 220MHz, a zero beat marker will be created. Adjust the frequency offset pot (R426) on the A/D card so that the marker is in the center of the display.

### 3.1.6 Gain Adjustment

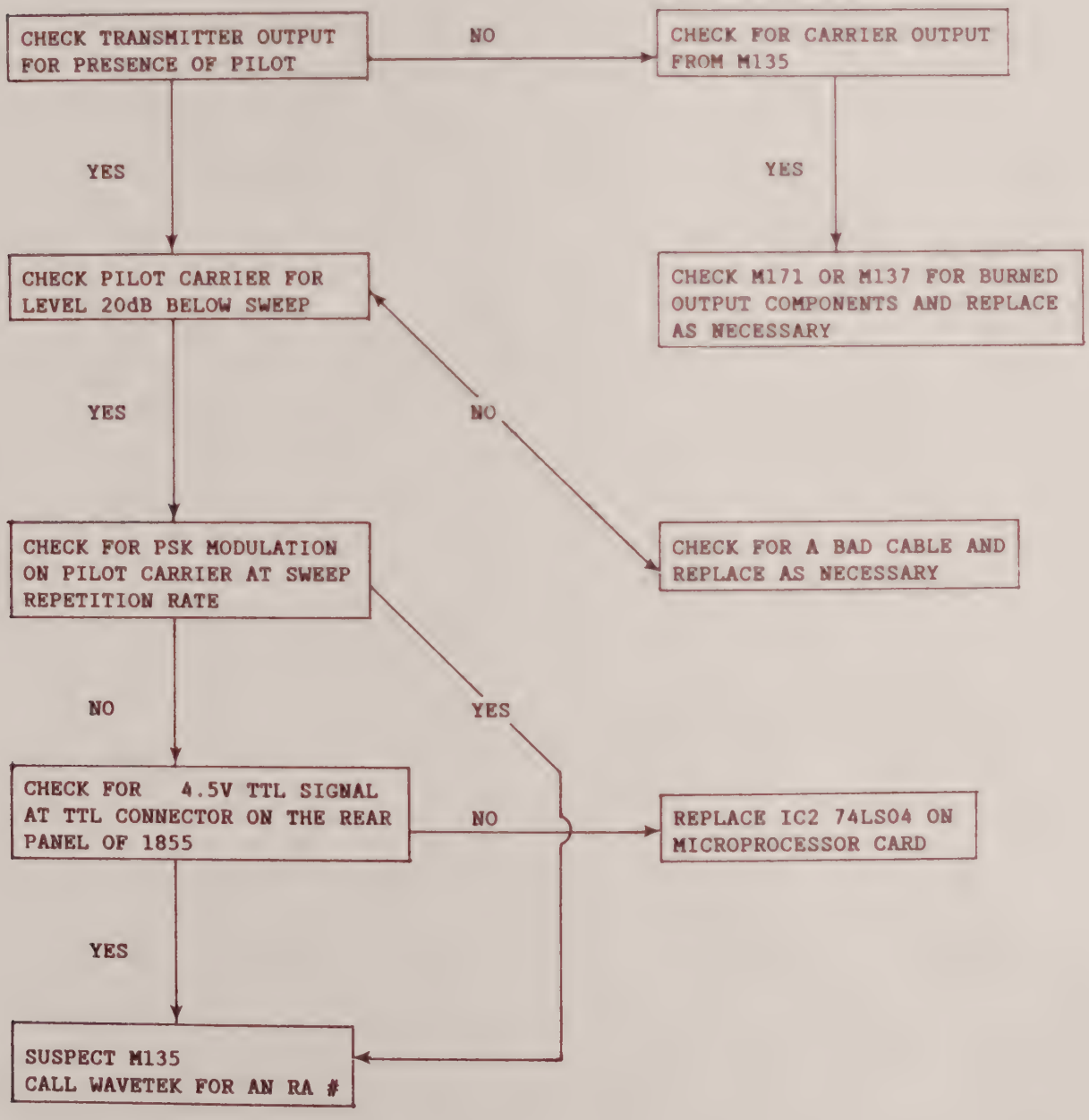
Set the 1865 attenuators at 65dB and the output of a calibrated 1855 at +55dBmV. The adjustment is on the M118. Make sure the MAN/AUTO switch is in the AUTO position. Adjust the GAIN pot so that the response lines up with the middle graticule line of the display. (NOTE: Do not adjust the CENTER pot. This is only adjusted during the original calibration of the module, which is done in a special test fixture.)

### 3.1.7 Timing Adjustments

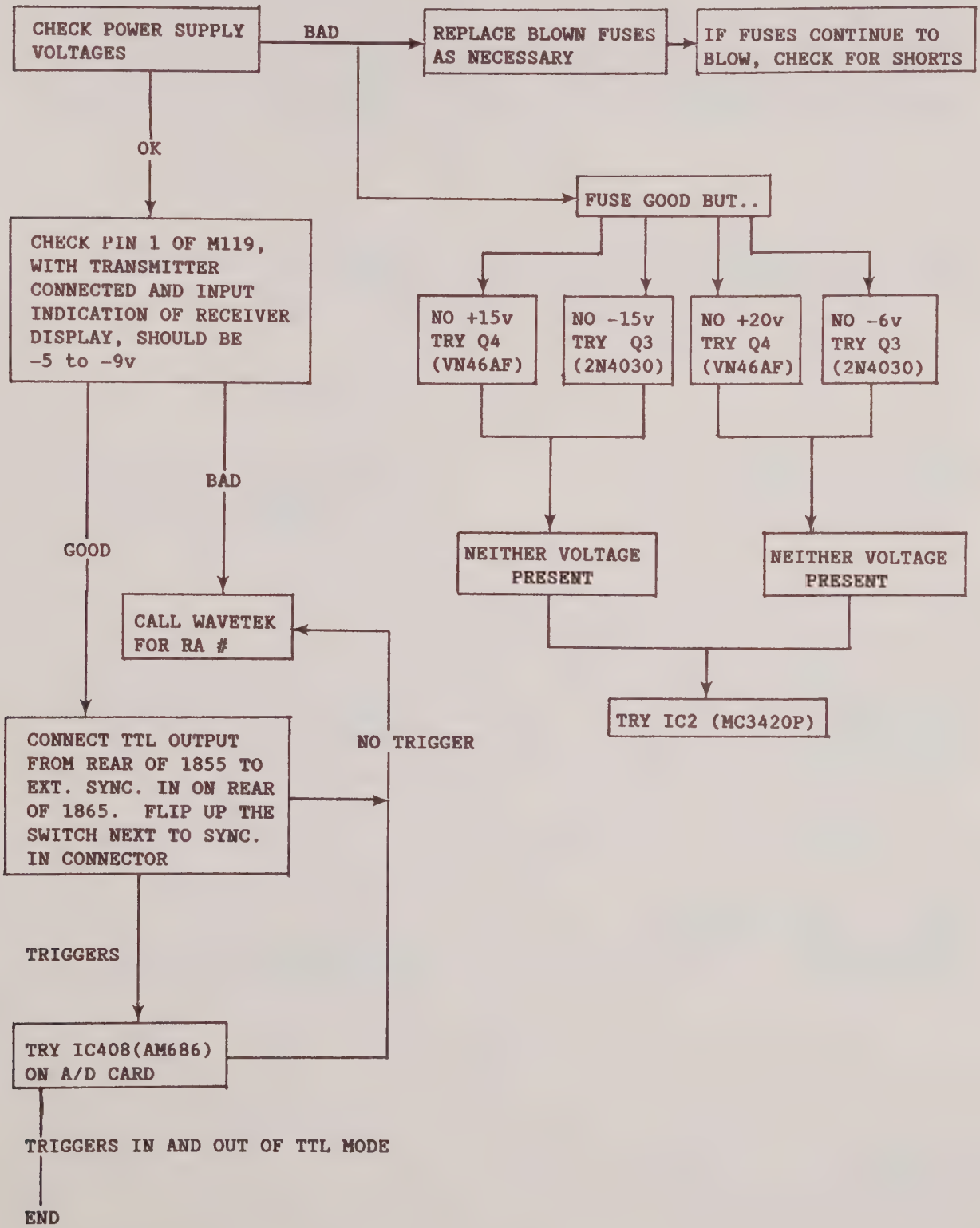
If it is necessary, the intensity of the GRID, DATA, cursors in LINE or AMPLitude modes, and the ALPHA-numerics can each be adjusted individually with the row of pots at the top of the VERTICAL/HORIZONTAL TIMING CARD. Adjust the LINE pots with the unit in LINE mode and the DOT pots with the unit in the DOT mode. In the line mode the GRID should have less intensity than the DATA, and the cursors in LINE AMPL and the LINE FREQ should have brightness equal to or brighter than the DATA. The ALPHA's should be the same intensity as the DATA. In the DOT mode, the GRID should be the same intensity as the LINE GRID. The DOT DATA should be brighter than the cursors (DOT AMPL and DOT FREQ), which should be as bright as the line cursors.

Probably the most common type of failure in the sweep recovery system is the lack of a trigger, or update of the sweep response. The first thing to do when this occurs is check the pilot and sync switches on the rear panel of both units to make sure they are in the proper positions. The following trouble shooting tree should be an aid in trouble analysis.

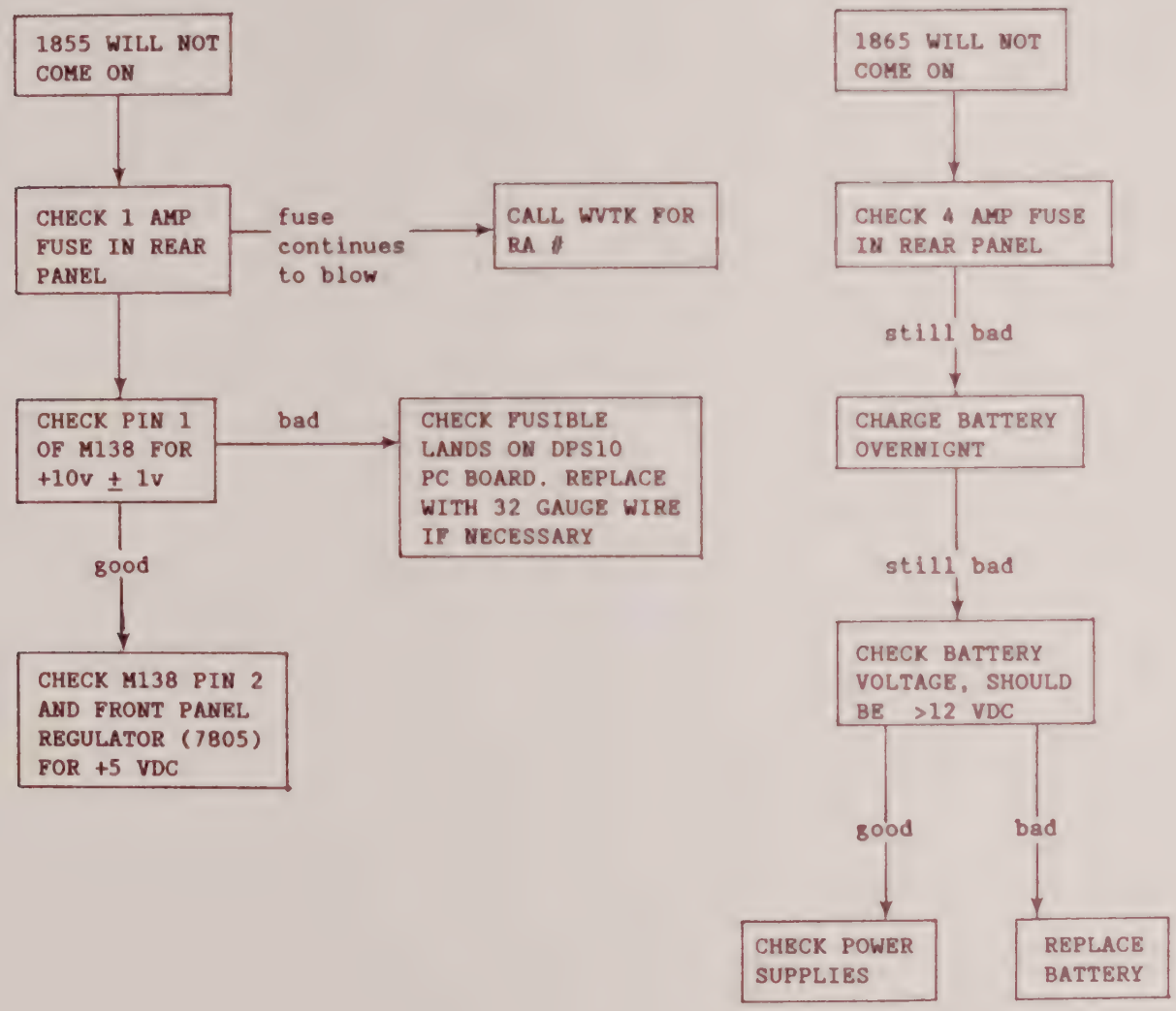
START


CHECK TRANSMITTER OUTPUT FOR PRESENCE OF PILOT
NO
CHECK FOR CARRIER OUTPUT FROM M135
YES
YES
CHECK PILOT CARRIER FOR LEVEL 20dB BELOW SWEEP
CHECK M171 OR M137 FOR BURNED OUTPUT COMPONENTS AND REPLACE AS NECESSARY
YES
NO
CHECK FOR A BAD CABLE AND REPLACE AS NECESSARY
CHECK FOR PSK MODULATION ON PILOT CARRIER AT SWEEP REPETITION RATE
NO
YES
CHECK FOR 4.5V TTL SIGNAL AT TTL CONNECTOR ON THE REAR PANEL OF 1855
NO
REPLACE IC2 74LS04 ON MICROPROCESSOR CARD
YES
SUSPECT M135
CALL WAVETEK FOR AN RA #

The following troubleshooting tree will aid in analysis of 1865 problems, after the performance of the 1855 transmitter has been verified.


CHECK POWER SUPPLY VOLTAGES
BAD
REPLACE BLOWN FUSES AS NECESSARY
IF FUSES CONTINUE TO BLOW, CHECK FOR SHORTS
OK
FUSE GOOD BUT..
CHECK PIN 1 OF M119, WITH TRANSMITTER CONNECTED AND INPUT INDICATION OF RECEIVER DISPLAY, SHOULD BE -5 to -9v
NO +15v TRY Q4 (VN46AF)
NO -15v TRY Q3 (2N4030)
NO +20v TRY Q4 (VN46AF)
NO -6v TRY Q3 (2N4030)
BAD
GOOD
NEITHER VOLTAGE PRESENT
NEITHER VOLTAGE PRESENT
CALL WAVETEK FOR RA #
TRY IC2 (MC3420P)
CONNECT TTL OUTPUT FROM REAR OF 1855 TO EXT. SYNC. IN ON REAR OF 1865. FLIP UP THE SWITCH NEXT TO SYNC. IN CONNECTOR
NO TRIGGER
TRIGGERS
TRY IC408(AM686) ON A/D CARD
TRIGGERS IN AND OUT OF TTL MODE
END

The following troubleshooting trees will aid in the analysis of problems with the turn on of the transmitter and receiver.


1855 WILL NOT COME ON
CHECK 1 AMP FUSE IN REAR PANEL
fuse continues to blow
CALL WVTK FOR RA #
CHECK PIN 1 OF M138 FOR +10v ± 1v
bad
CHECK FUSIBLE LANDS ON DPS10 PC BOARD. REPLACE WITH 32 GAUGE WIRE IF NECESSARY
good
CHECK M138 PIN 2 AND FRONT PANEL REGULATOR (7805) FOR +5 VDC
1865 WILL NOT COME ON
CHECK 4 AMP FUSE IN REAR PANEL
still bad
CHARGE BATTERY OVERNIGNT
still bad
CHECK BATTERY VOLTAGE, SHOULD BE >12 VDC
good
bad
CHECK POWER SUPPLIES
REPLACE BATTERY

SECTION 5

PARTS LIST

1855B


| | | PAGE |
|---|---|---|
| CATV XMTR | 1010-00-0167 | 42 |
| CABLE ASSY, 4 ¼ IN | 1217-70-0058 | |
| CABLE ASSY, 8 ½ IN | 1217-70-0059 | 43 |
| CABLE ASSY, 1 ¼ IN | 1217-90-0028 | |
| LATCH CARD | 1110-00-0160 | |
| RAMP CARD | 1110-00-0180 | 44-45 |
| UPROC BD | 1110-00-9004 | 46-47 |
| CHASSIS | 1111-00-0090 | 48 |
| LOOP COUNTER, M138 | 1114-00-0266 | |
| PC ASSY, M138 | 1218-00-0490 | 49 |
| SWP OSC, M9L-1 | 1114-00-0310 | 50-51 |
| M9L-1 MODULE ASSY | 1216-40-0012 | 52 |
| SUMMING OUTPUT AMP, M171 | 1114-00-0348 | 53 |
| PC ASSY, M171 | 1218-00-1350 | 54-55 |
| PSK MODULATOR, M135-50 | 1114-00-0355 | 56 |
| PC ASSY, M135-50 | 1218-00-0470 | 57-58 |
| POWER SUPPLY,DPS10 | 1115-00-0017 | 59 |
| PC ASSY, DPS10 | 1218-00-0170 | 60 |
| LINE CORD ASSY,DPS10 | 1219-40-0013 | 61 |
| FRONT PANEL | 1118-00-0045 | |
| FRONT PANEL PC | 1218-00-0550 | 62 |
| PWR SWITCH, 16 ½ | 1212-00-0011 | 63 |
| MAIN BD 1 | 1218-00-0530 | |
| MAIN BD 2 | 1218-00-0540 | |
| HARNESS,1855 | 1219-00-0160 | |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 01 | CHASSIS, 1855 | 1855-CHAS | W-I | 1111-00-0090 | 1.000 |
| 04 | SUMMING OUTPUT AMP, M171 | M171 | W-I | 1114-00-0348 | 1.000 |
| 05 | SWP OSC, M9L-1 | M9L-1 | W-I | 1114-00-0310 | 1.000 |
| 08 | LOOP COUNTER, M138 | M138 | W-I | 1114-00-0266 | 1.000 |
| 100 | FRONT PANEL, 1855 | 1855-FP | W-I | 1118-00-0045 | 1.000 |
| 400 | LATCH CARD, 1855 | 1855-LATCH CD | W-I | 1110-00-0160 | 1.000 |
| 500 | RAMP CARD, 1855 | 1855-RAMP CD | W-I | 1110-00-0180 | 1.000 |
| W01 | CABLE ASSY, 4 3/4 IN | WX1855-W1 | W-I | 1217-70-0058 | 1.000 |
| W02 | CABLE ASSY,8-1/2 IN | WX1855-W2 | W-I | 1217-70-0059 | 1.000 |
| W04 | CABLE ASSY, 1 3/4 IN | WX1855-W4 | W-I | 1217-90-0028 | 1.000 |
| W05 | CABLE ASSY,1-1/2IN | WX1855-W5 | W-I | 1217-90-0032 | 1.000 |

| WAVETEK PARTS LIST | CATV XMTR,1855B | 1010-00-0167<br>PAGE: 1 | A<br>REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 2.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 4 3/4 IN | 1217-70-0058<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN,BNC,75,PANEL | 28JS161-1 | S-C | 2110-01-1020 | 1.000 |
| 2 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 1.000 |
| K2 | NUT JZ000-004 | N101-4 | S-C | 2111-00-0002 | 1.000 |
| K3 | GASKET JZ000-005 | G101-5 | S-C | 2111-01-0002 | 1.000 |
| K4 | CLAMP JZ000-006 | BC101-4 | S-C | 2111-02-0002 | 1.000 |
| WAVETEK PARTS LIST | CABLE ASSY,8-1/2 IN | 1217-70-0059 PAGE: 1 | | | A REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONNECTOR,SMC RA | 37P121-1 | S-C | 2110-03-1005 | 2.000 |
| WAVETEK PARTS LIST | CABLE ASSY, 1 3/4 IN | 1217-90-0028 PAGE: 1 | | | REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C401 C402 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C403 C404 C405 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 3.000 |
| C406 | CAP,ELEC,10V,150UF | 503D157M025NB | SPR | 1510-20-8151 | 1.000 |
| C407 | CAP,DISC,1KV,150PF | 60U151M | MDC | 1510-10-1151 | 1.000 |
| C408 | CAP,MICA,500V,560PF | DM-15-561J | ARC | 1510-50-0561 | 1.000 |
| IC401 | PO VOLTAGE REG. | UA7805UC | FCD | 7000-78-0523 | 1.000 |
| IC402 IC403 IC405 IC406 IC407 IC408 | OCTAL D FLIP FLOP | SN74LS273N | T-I | 8007-42-7310 | 6.000 |
| IC404 | QUAD D FLIP-FLOP | SN74LS175N | T-I | 8007-41-7510 | 1.000 |
| IC409 | DCDR/DEMUXR | SN74LS138N | T-I | 8007-41-3810 | 1.000 |
| IC410 | QUAD NOR | SN74LS02N | T-I | 8000-74-0210 | 1.000 |
| R401 | RES,C,1/4W,5%,3.3K | CF1/4-3.3K | ASE | 4700-15-3301 | 1.000 |
| R402 | RES,C,1/4W,5%,220 | CF1/4-220 | ASE | 4700-15-2200 | 1.000 |
| WAVETEK PARTS LIST | LATCH CARD, 1855 | 1110-00-0160 PAGE: 1 | | | A REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C501 C502 C503 C504 C508 C509 C510 C511 C516 C517 C519 C520 C522 C523 C526 C527 C528 C529 C532 C533 C534 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 21.000 |
| C505 | CAP,FILM,50V,.22UF | F141A2203K050S | UNCAR | 1510-61-0224 | 1.000 |
| C506 C507 | CAP,DISC,1KV,75PF | 10TS-Q75 | SPR | 1510-10-1750 | 2.000 |
| C512 C514 | CAP,TANT,50V,.47UF | T310A474050AS | UNCAR | 1510-21-9470 | 2.000 |
| C513 C515 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 2.000 |
| C518 C521 C524 C525 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 4.000 |
| C530 C531 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 2.000 |
| IC501 | COMPANDING DAC | DAC-86CX | PMI | 8000-00-8600 | 1.000 |
| IC502 | QUAD ANALOG SWITCH STATIC SENSITIVE | HI-201-5 | HSD | 8000-02-0100 | 1.000 |
| IC503 | IC,IL003-001 | LF355N | NAT | 7000-03-5500 | 1.000 |
| IC504 IC505 IC511 IC513 IC514 | DAC,8-BIT | DAC-08EQ | AMD | 8000-00-0800 | 5.000 |
| IC506 IC515 IC516 IC519 | OP AMP | N5741CV | SIG | 7000-57-4100 | 4.000 |
| IC507 IC512 | DUAL OP AMP,RAY ONLY | RC4558NB-RAY | RAY | 7000-45-5801 | 2.000 |
| IC508 | DUAL COMPARATOR | LM393N | NAT | 7000-03-9310 | 1.000 |
| IC509 | VOLT REG,+15V | UA78M15UC | FCD | 7000-78-1500 | 1.000 |
| IC510 | NEG VOLTAGE REG | UA79M15AUC | FCD | 7000-79-1500 | 1.000 |
| IC518 | VOLTAGE REFERENCE | REF-02CJ | PMI | 7000-00-0200 | 1.000 |
| Q501 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 1.000 |
| R501 | RES,MF,1/8W,1%,9.09K | RN55D-9.09K | MILSP | 4701-03-9091 | 1.000 |
| R502 | RES,MF,1/8W,1%,200 | RN55D-200 | MILSP | 4701-03-2000 | 1.000 |
| R503 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 1.000 |
| R504 R515 R516 R530 R534 R535 R537 R550 R551 R552 R554 R565 R567 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 13.000 |
| R505 | RES,MF,1/8W,1%,100K | RN55D-100K | MILSP | 4701-03-1003 | 1.000 |
| R506 | RES,MF,1/8W,1%,2.26K | RN55D-2.26K | MILSP | 4701-03-2261 | 1.000 |
| R507 R526 R570 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 3.000 |
| R508 R509 R517 R518 | RES,C,1/4W,5%,20 | CF1/4-20 | ASE | 4700-15-2009 | 4.000 |
| R510 R527 R528 R571 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 4.000 |
| R511 R513 R521 R556 | RES,MF,1/8W,1%,4.99K | RN55D-4.99K | MILSP | 4701-03-4991 | 4.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R512 R514 R519 R538 R553 R569 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 6.000 |
| R520 R555 | RES,C,1/4W,5%,510 | CF1/4-510 | ASE | 4700-15-5100 | 2.000 |
| R522 R557 | RES,MF,1/8W,1%,499 | RN55D-499 | MILSP | 4701-03-4990 | 2.000 |
| R523 R525 R562 | RES,MF,1/8W,1%,2K | RN55D-2K | MILSP | 4701-03-2001 | 3.000 |
| R524 | RES,MF,1/8W,1%,12.8K | RN55D-12.8K | MILSP | 4701-03-1282 | 1.000 |
| R529 | RES,C,1/4W,5%,4.7M | CB4755 | A-B | 4700-15-4704 | 1.000 |
| R531 R544 R547 | RES,MF,1/8W,1%,1.40K | RN55D-1.40K | MILSP | 4701-03-1401 | 3.000 |
| R532 R545 R548 | RES,MF,1/8W,1%,1.1K | RN55D-1.1K | MILSP | 4701-03-1101 | 3.000 |
| R533 R546 R549 | RES,C,1/4W,5%, 2.4K | CF1/4-2.4K | ASE | 4700-15-2401 | 3.000 |
| R536 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 1.000 |
| R539 R541 | RES,C,1/4W,5%,3K | CF1/4-3K | ASE | 4700-15-3001 | 2.000 |
| R540 | RES,C,1/4W,5%,3.3K | CF1/4-3.3K | ASE | 4700-15-3301 | 1.000 |
| R542 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R543 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 1.000 |
| R558 R559 | RES,MF,1/8W,1%,1K | RN55D-1K | MILSP | 4701-03-1001 | 2.000 |
| R560 | RES,MF,1/8W,1%,1.50K | RN55D-1.50K | MILSP | 4701-03-1501 | 1.000 |
| R561 | RES,MF,1/8W,1%,11.3K | RN55D-11.3K | MILSP | 4701-03-1132 | 1.000 |
| R563 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 1.000 |
| R564 R568 | POT,2K,RP130-220 | 89PR2K | BEK | 4610-00-2202 | 2.000 |
| R566 | RES,C,1/4W,5%,560 | CF1/4-560 | ASE | 4700-15-5600 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C201 C202 C205 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 3.000 |
| C203 C204 | CAP,MICA,500V,27PF | CM05ED270J03 | ARC | 1510-50-0270 | 2.000 |
| C206 C208 C209 C213 C214 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 5.000 |
| C207 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 1.000 |
| C210 C211 | CAP,ELEC,10V,150UF | 503D157M025NB | SPR | 1510-20-8151 | 2.000 |
| C212 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| IC201 | UPROC W/CLK & RAM STATIC SENSITIVE | MC6802P | MOT | 8000-68-0210 | 1.000 |
| IC202 | HEX INVERTER | SN74LS04N | T-I | 8000-74-0410 | 1.000 |
| IC203 IC204 | DCDR/DEMUXR | SN74LS138N | T-I | 8007-41-3810 | 2.000 |
| IC205 | ROM,MOD19,1855B,LEFT FROM:8000-25-1610 | 8410-00-0017 | W-I | 8410-00-0017 | 1.000 |
| IC206 | ROM,MOD19,1855B,RHT. FROM:8000-25-1610 | 8410-00-0018 | W-I | 8410-00-0018 | 1.000 |
| IC207 | PGM TIMER STATIC SENSITIVE | MC6840P | MOT | 8000-68-4010 | 1.000 |
| IC208 | OCTAL BFR/DRVR/RCVR | SN74LS240N | T-I | 8007-42-4010 | 1.000 |
| IC209 | DUAL COMPARATOR | LM393N | NAT | 7000-03-9310 | 1.000 |
| IC210 | 8-IN POS NAND | SN74LS30N | T-I | 8000-74-3010 | 1.000 |
| IC211 | PO VOLTAGE REG. | UA7805UC | FCD | 7000-78-0523 | 1.000 |
| IC212 | OCTAL BUS XVR | SN74LS245N | T-I | 8007-42-4510 | 1.000 |
| IC213 | OCTAL BUF/LN DRVR | SN74LS244N | T-I | 8007-42-4410 | 1.000 |
| IC214 | HEX 3-STATE BUFFER | 8T95 | SIG | 8000-08-9510 | 1.000 |
| P202 | HEADER,3-PIN STRT REF:2112-07-0000 | MC000-096 | W-I | 2112-07-0001 | 1.000 |
| P203 | HEADER,STRT,2 PIN REF:2112-07-0000 | 2112-07-0007 | W-I | 2112-07-0007 | 1.000 |
| P204 P205 | PGM DIP SHUNT | 435704-8 | AMP | 2112-28-0001 | 2.000 |
| P206 | PGM DIP SHUNT, 7-POS | 435704-7 | AMP | 2112-28-0005 | 1.000 |
| Q201 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 1.000 |
| Q202 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 1.000 |
| R201 R217 | RES,C,1/4W,5%,3.3K | CF1/4-3.3K | ASE | 4700-15-3301 | 2.000 |
| R202 R203 | RES NTWK,SIP,9-470K | 109-474J | EPITK | 4770-00-0011 | 2.000 |
| R204 R205 | RES NTWK,SIP,9-4.7K | 109-472J | EPITK | 4770-00-0014 | 2.000 |
| R206 | RES,MF,1/8W,1%,90.9K | RN55D-90.9K | MILSP | 4701-03-9092 | 1.000 |

| WAVETEK PARTS LIST | UPROC BD, 1855B | 1110-00-9004 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R207 | RES,MF,1/8W,1%,13.0K | RN55D-13.0K | MILSP | 4701-03-1302 | 1.000 |
| R208 | RES,MF,1/8W,1%,442K | RN55D-442K | MILSP | 4701-03-4423 | 1.000 |
| R209 | RES,MF,1/8W,1%,110K | RN55D-110K | MILSP | 4701-03-1103 | 1.000 |
| R210 R211 | RES,C,1/4W,5%,51K | CF1/4-51K | ASE | 4700-15-5102 | 2.000 |
| R212 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 1.000 |
| R213 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| R214 R215 | RES,1/8W,1%, 49.9K | RN55D-49.9K | MILSP | 4701-03-4992 | 2.000 |
| R216 | RES,C,1/4W,5%,1M | CF1/4-1M | ASE | 4700-15-1004 | 1.000 |
| R218 | RES,C,1/4W,5%,10M | CB1065 | A-B | 4700-15-1005 | 1.000 |
| R219 | RES,C,1/4W,5%,200K | CF1/4-200K | ASE | 4700-15-2003 | 1.000 |
| R220 | RES,C,1/4W,5%,33K | CF1/4-33K | ASE | 4700-15-3302 | 1.000 |
| R221 | RES,C,1/4W,5%,560K | CF1/4-560K | ASE | 4700-15-5603 | 1.000 |
| R222 | RES,C,1/4W,5%,470K | CF1/4-470K | ASE | 4700-15-4703 | 1.000 |
| X201 | CRYSTAL, 4 MHZ | MP040 | CTS-E | 2310-00-0451 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| J501 | PC EDGE CONN,12-CKT | 031-06134-200 | TEKA | 2112-27-0004 | 1.000 |
| NONE | SUP BRKT PER B/P | 1410-30-1180 | W-I | 1410-30-1180 | 1.000 |

| WAVETEK PARTS LIST | CHASSIS, 1855 | 1111-00-0090 PAGE: 1 | H REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C02 C05 C10 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 4.000 |
| C03 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 1.000 |
| C04 | CAP,ELEC,6V,100UF | ME3B100 | ARC | 1510-21-1101 | 1.000 |
| C06 C11 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C14 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 1.000 |
| IC01 | VOLT REG,+5V | 78M05U1C | FCD | 7000-78-0500 | 1.000 |
| J01 | CONN JF000-005 | 37JR116-1 | S-C | 2110-03-0002 | 1.000 |
| L01 L02 L06 L08 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 4.000 |
| L03 | TOROID,10T,1-1/2L | LA009-010-2 | W-I | 1810-05-0005 | 1.000 |

| WAVETEK PARTS LIST | LOOP COUNTER, M138 | 1114-00-0266 PAGE: 1 | D REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C07 C08 C16 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 3.000 |
| C09 C12 C13 C15 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 4.000 |
| C14 C17 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 2.000 |
| CR01 CR02 CR03 CR04 | DIODE,SCHOTTKY | 5082-2835 | H-P | 4809-02-0002 | 4.000 |
| IC02 | DIVIDE-BY-10, ECL STATIC SENSITIVE | 11C90DC | FCD | 8000-11-9000 | 1.000 |
| IC03 | UP/DN COUNTER | SN74S169 | T-I | 8007-41-6900 | 1.000 |
| L04 L05 L07 | TOROID,4T,1-1/4L | LA009-004-1 | W-I | 1810-05-0003 | 3.000 |
| L09 | COL,AIR,6T,.200 ID | 6T,PER SPEC. | ATR | 1815-00-0004 | 1.000 |
| L10 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 1.000 |
| Q01 | TRANSISTOR,NPN, MOT ONLY | 2N5179-MOT | MOT | 4901-05-1791 | 1.000 |
| R01 R04 | RES,C,1/4W,5%,1.2K | CF1/4-1.2K | ASE | 4700-15-1201 | 2.000 |
| R02 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 1.000 |
| R05 R06 | RES,C,1/4W,5%,3K | CF1/4-3K | ASE | 4700-15-3001 | 2.000 |
| R07 | RES,C,1/4W,5%,110 | CF1/4-110 | ASE | 4700-15-1100 | 1.000 |
| R08 | RES,C,1/8W,5%,240 | CF1/8-240 | ASE | 4700-05-2400 | 1.000 |
| R09 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R10 R11 | RES,C,1/8W,5%,33 | CF-1/8-33 | ASE | 4700-05-3309 | 2.000 |
| R12 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY, M138 | 1218-00-0490 PAGE: 1 | F REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 6 | NUT,6-32X1/4HN101-600 | 8005NP | F-S | 2810-14-6100 | 2.000 |
| 7 | INT,LOWASHER,6 HW101-600 | 1304ZP | F-S | 2810-24-6000 | 2.000 |
| 10 | TUBE | A000-694 | W-I | 1410-00-1360 | 1.000 |
| 14 | INDUCTOR STRAP | A000-743 | W-I | 1410-00-1580 | 1.000 |
| 20 | FERR. BEAD,LC000-009 | K5-001-00/3B | FRXC | 1813-00-0007 | 2.000 |
| C04 C20 | CAP,DISC,1KV,100PF | CN1500-100PF | RMC | 1510-10-5101 | 2.000 |
| C7 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C08 | CAP,COMP,500V,.75PF | QC-.75PF | Q-C | 1510-40-0758 | 1.000 |
| C09 C12 C15 | CAP,TANT,50V,.47UF | T310A474050AS | UNCAR | 1510-21-9470 | 3.000 |
| C10 | CAP,COMP,500V,.47PF | MC-.47PF | Q-C | 1510-40-1478 | 1.000 |
| C14* | CAP,COMP,500V,2.4PF | QC-2.4PF | Q-C | 1510-40-0249 | 1.000 |
| C16* | CAP,COMP,500V,.27PF | MC-.27PF | Q-C | 1510-40-1278 | 1.000 |
| C24 C26 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 2.000 |
| C27 C30 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 2.000 |
| C28 | CAP,VALUE DETERMINED IN CALIBRATION | CAP,TRIM | W-I | 1519-99-9999 | 1.000 |
| C32* | CAP,COMP,500V,3.9PF | QC-3.9PF | Q-C | 1510-40-0399 | 1.000 |
| C34 | CAP,NON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| C36 C37 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 2.000 |
| CR01 CR02 CR03 CR07 CR08 | DIODE DC000-005 | BB121A | ITT | 4889-00-0001 | 5.000 |
| CR04 CR05 | DIODE,SCHOTTKY | 5082-2835 | H-P | 4809-02-0002 | 2.000 |
| CR06 CR09 | DIODE,ZENER,6.8V | 1N4736A | MOT | 4801-02-0001 | 2.000 |
| L01 L03 | CHOKE,COATED,.22UH | 08NR22 | JEF | 1810-03-0228 | 2.000 |
| L02 L10 | CHOKE,8T,32 GA FROM:4705-16-4701 | 1210-33-0001 | W-I | 1210-33-0001 | 2.000 |
| L04 L11 | RF CHOKE,REF ONLY | CHOKE | W-I | 1819-99-9999 | 2.000 |
| L05 | WIRE,MGNT,32GA,GN | 8056-GN | BEL | 6010-73-2000 | 1.000 |
| L09 | CHOKE,COATED,1UH | 08N1R0 | JEF | 1810-03-0010 | 1.000 |
| L12 L18 | TOROID,4T,1-1/4L | LA009-004-1 | W-I | 1810-05-0003 | 2.000 |
| L13 | CHOKE,COATED,4.7UH | 08N4R7 | JEF | 1810-03-0479 | 1.000 |
| L14 L15 L16 L17 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 4.000 |
| Q01 Q08 | TRANS QB000-009 | MPS3702 | NAT | 4902-03-7020 | 2.000 |
| Q02 | TRANS QB000-013 | A430 | APX | 4902-00-4300 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| Q03 Q05 Q06 Q13 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 4.000 |
| Q07 | TRANS QA050-880 | 2N5088 | MOT | 4901-05-0880 | 1.000 |
| Q10 Q11 Q12 | TRANSISTOR,NPN, MOT ONLY | 2N5179-MOT | MOT | 4901-05-1791 | 3.000 |
| Q14 | TRANS QA054-580 | 2N5458 | MOT | 4901-05-4580 | 1.000 |
| R01 | RES,C,1/4W,5%,18K | CF1/4-18K | ASE | 4700-15-1802 | 1.000 |
| R02 R27 R45 R46 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 4.000 |
| R03 R22 | POT,10K,RP129-310 | 360S103B | CTS | 4610-00-1103 | 2.000 |
| R04 R30 | RES,C,1/4W,5%,680 | CF1/4-680 | ASE | 4700-15-6800 | 2.000 |
| R05 R06 R19 R31 R32 R38 | RES,C,1/4W,10%,4.7K RC104-247AB | CB4721 | A-B | 4705-16-4701 | 6.000 |
| R07 R33 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 2.000 |
| R08 | RES,C,1/4W,5%,5.6K | CF1/4-5.6K | ASE | 4700-15-5601 | 1.000 |
| R09 | POT,20K,RP129-320 | 360S203B | CTS | 4610-00-1203 | 1.000 |
| R10 | RES,C,1/4W,5%,47K | CF1/4-47K | ASE | 4700-15-4702 | 1.000 |
| R11 | RES,C,1/4W,5%,4.7 | CF1/4-4.7 | ASE | 4700-15-4708 | 1.000 |
| R12 | RES,C,1/4W,5%,390 | CF1/4-390 | ASE | 4700-15-3900 | 1.000 |
| R13 R21 R34 R35 R39 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 5.000 |
| R14 R17 R36 R37 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 4.000 |
| R18 R20 R40 | RES,C,1/4W,5%,47 | CF1/4-47 | ASE | 4700-15-4709 | 3.000 |
| R24 | RES,C,1/4W,5%,7.5K | CF1/4-7.5K | ASE | 4700-15-7501 | 1.000 |
| R25 | RES,C,1/4W,5%,33K | CF1/4-33K | ASE | 4700-15-3302 | 1.000 |
| R26 | RES,C,1/4W,5%,4.7K | CF1/4-4.7K | ASE | 4700-15-4701 | 1.000 |
| R29 | RES,C,1/4W,5%,2.2K | CF1/4-2.2K | ASE | 4700-15-2201 | 1.000 |
| R41 | RES,C,1/4W,5%,150 | CF1/4-150 | ASE | 4700-15-1500 | 1.000 |
| R42 | RES,C,1/4W,5%,22 | CF1/4-22 | ASE | 4700-15-2209 | 1.000 |
| R43 | RES,C,1/4W,5%,10M | CB1065 | A-B | 4700-15-1005 | 1.000 |
| R44 | RES,C,1/4W,5%,15M | CB1565 | A-B | 4700-15-1505 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 3 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 4 | CLOVERLEAF FTE-12 HT101-000 | 011-6808-000-59-9 | SEL | 2112-18-0001 | 25.000 |
| 5 | CLOVERLEAF FTE-15 HT102-000 | 011-6809-00-0-599 | SEL | 2112-18-0002 | 1.000 |
| 6 | NUT,6-32X1/4HN101-600 | 8005NP | F-S | 2810-14-6100 | 2.000 |
| 7 | INT,LOWASHER,6 HW101-600 | 1304ZP | F-S | 2810-24-6000 | 2.000 |
| 8 | COMPART BOX | A001-313 | W-I | 1410-00-3800 | 1.000 |
| 9 | COMPARTMENT WALL | A001-312 | W-I | 1410-00-3790 | 2.000 |
| 11 | SCW,SBH,6-32X1/4 | 6-32X1/4,UC,BH,NP | S-S | 2810-17-6104 | 1.000 |
| 12 | COVER,SMALL FROM:1410-00-1180 | A000-693 | W-I | 1410-00-1359 | 2.000 |
| 13 | GROUND STRAP REF:3210-99-0024 | A000-671 | W-I | 1410-00-1229 | 2.000 |
| C01 C33 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 2.000 |
| C02 C05 C11 C13 C17 C18 C19 C21 C29 C31 | CAP,FT,250V,500PF | 4420-500PF | AER | 1510-30-3501 | 10.000 |
| C03 C06 C22 | CAP,FT,250V,100PF | 4420-100PF | AER | 1510-30-3101 | 3.000 |
| C23 C25 | CAP,FT,500V,470PF | FA5C-4712 | A-B | 1510-30-0471 | 2.000 |
| J01 J02 | CONN JF000-005 | 37JR116-1 | S-C | 2110-03-0002 | 2.000 |
| R23 | POT,20K | WA26032S-203MA | A-B | 4610-10-7203 | 1.000 |

| WAVETEK PARTS LIST | M9L-1 MODULE ASSY | 1216-40-0012 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 4 | DECAL,CAN,M171 | CDB-230 | W-I | 2410-04-0447 | 1.000 |
| 5 | PC ASSY, M171 | M171-PC | W-I | 1218-00-1350 | 1.000 |
| 6 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 7 | SCW,SBH,6-32X3/16 | 6-32X3/16,BH,MP | S-S | 2810-17-6103 | 1.000 |
| 8 | INT,LOWASHER,6 MW101-600 | 1304ZP | F-S | 2810-24-6000 | 1.000 |
| 9 | CABLE,SHIELDED COAX. 24 GA. | D WIRE,24GA | BEW | 6011-40-0002 | 5.000 |
| C21 C22 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 2.000 |
| C23 C24 C25 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 3.000 |
| J1 J2 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 2.000 |
| J3 | CONN JF000-005 | 37JR116-1 | S-C | 2110-03-0002 | 1.000 |

| WAVETEK PARTS LIST | SUMMING OUTPUT AMP, M171 | 1114-00-0348 PAGE: 1 | B REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 3 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 2.000 |
| 5 | 8,INT,LOWASHER HW101-800 | 1305ZP | F-S | 2810-24-8000 | 1.000 |
| 6 | NUT,HEX,8-32HN101-800 | 8007NP | F-S | 2810-14-8100 | 1.000 |
| C01 C02 C03 C04 C05 C06 C08 C09 C10 C11 | CAP,CER,25V,.022UF | HY-525 | SPR | 1510-11-9223 | 10.000 |
| C07 C18 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C12 | CAP,DISC,1KV,200PF | CCD-201 | ARC | 1510-10-1201 | 1.000 |
| C13 | CAP.,CHIP,360PF,10% | 100B361KP200X | ATC | 1510-00-2361 | 1.000 |
| C14 | CAP,DISC,1KV,47PF | 60U2J470J | MDC | 1510-10-3470 | 1.000 |
| C15 C17 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 2.000 |
| C16 | CAP,CHIP,47PF | C1005C470J2GAH | UNCAR | 1510-00-5470 | 1.000 |
| C19 | CAP,MICA,500V,470PF | DM15-471J | ARC | 1510-50-0471 | 1.000 |
| C20 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 1.000 |
| C26 | CAP,DISC,1KV,.003UF | 5GA-D30 | SPR | 1510-10-1302 | 1.000 |
| CR01 CR02 CR03 | DIODE,PIN | 5082-3080 | H-P | 4805-02-0002 | 3.000 |
| CR04 CR05 CR06 CR07 CR08 CR09 CR10 | DIODE,SWITCHING | BA482 | APX | 4812-02-0004 | 7.000 |
| CR11 | DIODE,SCHOTTKY | 5082-2800 | H-P | 4809-02-0001 | 1.000 |
| CR12 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 1.000 |
| IC01 IC02 | RF AMP,WIDE BAND,400 MHZ,55 MA DC | MWA120 | MOT | 7000-01-2000 | 2.000 |
| IC03 IC04 | DUAL OP AMP | TL082CP | T-I | 7000-00-8200 | 2.000 |
| L01 L02 L03 L04 L05 L06 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 6.000 |
| L07 | CHOKE,COATED,39UH | 08N390 | JEF | 1810-03-0390 | 1.000 |
| L08 | COIL,AIR,3-1/2 T. | 1815-00-0042 | W-I | 1815-00-0042 | 1.000 |
| Q01 | TRANS QB000-034 | BFR94 | APX | 4902-00-0940 | 1.000 |
| Q02 | TRANS QA054-610 | 2N5461 | MOT | 4901-05-4610 | 1.000 |
| R01 | RES,C,1/8W,5%,560 | CF 1/8-560 | ASE | 4700-05-5600 | 1.000 |
| R02 | RES.1/8W,5,330 | CF1/8-330 | ASE | 4700-05-3300 | 1.000 |
| R03 R43 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R04 | RES,C,1/8W,5%,10 | CF1/8-10 | ASE | 4700-05-1009 | 1.000 |
| R05 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 1.000 |
| R06 | RES,C,1/4W,5%,330 | CF1/4-330 | ASE | 4700-15-3300 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY, M171 | 1218-00-1350 PAGE: 1 | F REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R07 | RES,C,1/4,5%,27 | CF1/4-27 | ASE | 4700-15-2709 | 1.000 |
| R08 | RES,C,1/4W,5%,91K | CF1/4-91K | ASE | 4700-15-9102 | 1.000 |
| R09 R17 R20 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 3.000 |
| R10 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 1.000 |
| R11 R12 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 2.000 |
| R13 | RES,C,1/4W,5%,18 | CF 1/4-18 | ASE | 4700-15-1809 | 1.000 |
| R14 R30 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 2.000 |
| R15 R35 | RES,C,1/8W,5%,68 | CF1/8-68 | ASE | 4700-05-6809 | 2.000 |
| R16 | RES,C, 1/8W,5%, 5.1K | CF 1/8 -5.1 K | ASE | 4700-05-5101 | 1.000 |
| R18 | RES,C,1/4W,5%,2.7 | CF1/4-2.7 | ASE | 4700-15-2708 | 1.000 |
| R19 | RES.C.1/8W 5% 470 | CF1/8-470 | ASE | 4700-05-4700 | 1.000 |
| R21 | RES,C,1/4W,5%,24K | CF1/4-24K | ASE | 4700-15-2402 | 1.000 |
| R22 R23 | RES,C,1/4W,5%,1.5K | CF1/4-1.5K | ASE | 4700-15-1501 | 2.000 |
| R24 | RES,C,1/8W,5%,33 | CF-1/8-33 | ASE | 4700-05-3309 | 1.000 |
| R25 R26 | RES,C,1/8W,5%,47 | CF1/8-47 | ASE | 4700-05-4709 | 2.000 |
| R27 | RES,C,1/8W,5%,15 | CF-1/8-15 | ASE | 4700-05-1509 | 1.000 |
| R28 | POT,CERMET,500 | 89PR500 | BEN | 4610-00-2501 | 1.000 |
| R29 | RES,C,1/4W,5%,120 | CF1/4-120 | ASE | 4700-15-1200 | 1.000 |
| R31 R32 | RES,C,1/4W,5%,1.2K | CF1/4-1.2K | ASE | 4700-15-1201 | 2.000 |
| R33 | RES,C,1/4W,5%,15 | CF1/4-15 | ASE | 4700-15-1509 | 1.000 |
| R34 | RES,C,1/4W,5%,270 | CF1/4-270 | ASE | 4700-15-2700 | 1.000 |
| R36 | RES,C,1/8W,5%,6.2K | CF1/8-6.2K | ASE | 4700-05-6201 | 1.000 |
| R37 | RES,C,1/8W,5%,1K RC101-210 | CF1/8-1K | ASE | 4700-05-1001 | 1.000 |
| R38 | RES,C,1/4W,5%,12K | CF1/4-12K | ASE | 4700-15-1202 | 1.000 |
| R39 R42 | POT,20K,RP130-320 | 89PR20K | BEN | 4610-00-2203 | 2.000 |
| R40 | RES,C,1/4W,5%,4.7K | CF1/4-4.7K | ASE | 4700-15-4701 | 1.000 |
| R41 | RES,C,1/4W,5%,75K | CF1/4-75K | ASE | 4700-15-7502 | 1.000 |
| R44 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| R45 | RES,C,1/4W,5%,1M | CF1/4-1M | ASE | 4700-15-1004 | 1.000 |
| R46 | RES,C,1/4W,5%,68 | CF1/4-68 | ASE | 4700-15-6809 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C02 C06 C15 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 4.000 |
| C05 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 1.000 |
| CR09 CR10 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| J01 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 1.000 |
| L01 L02 | TOROID,10T | LA009-010 | W-I | 1810-05-0002 | 2.000 |
| MX01 | MIXER,DBL.BALANCED | CM-1 | VARIL | 3010-54-0001 | 1.000 |
| X1 | CRYSTAL,50.00000 MHZ | X33W-50.00000 | W-I | 2310-00-0561 | 1.000 |

| WAVETEK PARTS LIST | PSK MODULATOR, M135-50 | 1114-00-0355 PAGE: 1 | C REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C03 C04 C17 C18 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 4.000 |
| C07 C08 C12 C27 | CAP,DISC,1KV,10PF | 10TCC-Q10 | SPR | 1510-10-0100 | 4.000 |
| C09 C10 C11 C28 C29 | CAP,DISC,1KV,.001UF | 5GA010 | SPR | 1510-10-1102 | 5.000 |
| C13 C23 C26 | CAP,DISC,1KV,47PF | 10TCC-Q47 | SPR | 1510-10-0470 | 3.000 |
| C14 | CAP,DISC,1KV,120PF | 60U121M | MDC | 1510-10-1121 | 1.000 |
| C16 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| C19 C20 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 2.000 |
| C21 | CAP,DISC,1KV,33PF | 10TCC-Q33 | SPR | 1510-10-0330 | 1.000 |
| C22 | CAP,COMP,500V,3PF | QC-3PF | Q-C | 1510-40-0030 | 1.000 |
| C24 C25 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 2.000 |
| CR01 CR07 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| CR02 CR03 | DIODE,SCHOTTKY | 5082-2835 | H-P | 4809-02-0002 | 2.000 |
| CR04 CR05 CR06 | DIODE,PIN | MA47047 | M-A | 4805-02-0003 | 3.000 |
| CR08 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 1.000 |
| IC01 | OP AMP | N5741CV | SIG | 7000-57-4100 | 1.000 |
| J02 J03 | PV JUMPER | 65474-002 | BER | 2112-10-0002 | 2.000 |
| L03 L06 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1310-05-0004 | 2.000 |
| L04 | COIL,AIR,14T,.200 ID | 14T,PER SPEC. | ATR | 1815-00-0008 | 1.000 |
| L05 L11 | COIL,AIR,3T,.200 ID | 3T,PER SPEC. | ATR | 1815-00-0002 | 2.000 |
| L07 | COIL,AIR,10T,.200 ID | 10T,PER SPEC. | ATR | 1815-00-0007 | 1.000 |
| L08 | COIL,AIR,4T,.200 ID | 4T,PER SPEC. | ATR | 1815-00-0003 | 1.000 |
| L09 | COL,AIR,6T,.200 ID | 6T,PER SPEC. | ATR | 1815-00-0004 | 1.000 |
| L10 L13 | COIL,AIR,8T,.200 ID | 8T,PER SPEC. | ATR | 1815-00-0005 | 2.000 |
| L12 | CHOKE,COATED,47UH | 08N470 | JEF | 1810-03-0470 | 1.000 |
| P02 P03 | HEADER,STRT,2 PIN REF:2112-07-0000 | 2112-07-0007 | W-I | 2112-07-0007 | 2.000 |
| Q01 Q03 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 2.000 |
| Q02 Q04 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 2.000 |
| Q05 Q06 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 2.000 |
| R01 | RES,C,1/4W,5%,1.5K | CF1/4-1.5K | ASE | 4700-15-1501 | 1.000 |
| R02 R11 R34 R44 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 4.000 |
| R03 R05 | RES,C,1/4W,5%,27K | CF1/4-27K | ASE | 4700-15-2702 | 2.000 |
| R04 | RES,C,1/4W,5%,3K | CF1/4-3K | ASE | 4700-15-3001 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY, M135-50 | 1218-00-0470 PAGE: 1 | E REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R06 R17 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 2.000 |
| R07 | RES,C,1/4W,5%,430K | CF1/4-430K | ASE | 4700-15-4303 | 1.000 |
| R08 | RES,C,1/4W,5%,82 | CF1/4-82 | ASE | 4700-15-8209 | 1.000 |
| R09 R13 R37 R45 R46 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 5.000 |
| R10 R12 R14 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 3.000 |
| R15 R32 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 2.000 |
| R16 R28 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 2.000 |
| R18 R35 R48 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 3.000 |
| R19 R29 | POT,10K,RP130-310 | 89PR10K | BEK | 4610-00-2103 | 2.000 |
| R20 | RES,C,1/4W,5%,39K | CF1/4-39K | ASE | 4700-15-3902 | 1.000 |
| R21 R36 R51 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 3.000 |
| R22 | RES,C,1/8W,5%,33 | CF-1/8-33 | ASE | 4700-05-3309 | 1.000 |
| R23 R25 R41 R42 | RES,C,1/4W,5%,200 | CF1/4-200 | ASE | 4700-15-2000 | 4.000 |
| R24 | RES,C,1/4W,5%,62 | CF1/4-62 | ASE | 4700-15-6209 | 1.000 |
| R26 R27 | RES,C,1/8W,5%,150 | CF1/8-150 | ASE | 4700-05-1500 | 2.000 |
| R30 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 1.000 |
| R31 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| R33 R47 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 2.000 |
| R38 | RES,C,1/4W,5%,2.2K | CF1/4-2.2K | ASE | 4700-15-2201 | 1.000 |
| R39 R40 R52 | RES,C,1/4,5%,27 | CF1/4-27 | ASE | 4700-15-2709 | 3.000 |
| R43 | RES,C,1/4W,5%,330 | CF1/4-330 | ASE | 4700-15-3300 | 1.000 |
| R49 | RES,C,1/4W,5%,390 | CF1/4-390 | ASE | 4700-15-3900 | 1.000 |
| R50 | RES,C,1/4W,5%,68 | CF1/4-68 | ASE | 4700-15-6809 | 1.000 |
| R53 | RES,C,1/8W,5%,27 | BB 2705 | A-B | 4705-05-2709 | 1.000 |
| R57 R58 | RES,C,1/8W,5%,430 | BB4315 | A-B | 4705-05-4300 | 2.000 |
| T01 T02 | RF XFMR FROM:1813-00-0008 | 1210-41-0007 | W-I | 1210-41-0007 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONTACT,MC000-131 | 08-50-0106 | MOL | 2113-07-0002 | 7.000 |
| A01 | PC ASSY,DPS10 | DPS10-PC | W-I | 1218-00-0170 | 1.000 |
| A02 | LINE CORD ASSY,DPS10 | 1219-40-0013 | W-I | 1219-40-0013 | 1.000 |
| F01 | FUSE,SLO BLO,1 AMP, 250V | MDL-1 | BUS | 2410-05-0005 | 1.000 |
| J01 | JACK,FEMALE,9-CKT MC000-067 | 09-50-3091 | MOL | 2113-06-0001 | 1.000 |
| J101 | RECEPTACLE,4 PIN | 19-09-1042 | MOL | 2113-26-0002 | 1.000 |
| Q03 Q04 | PROT PWR DARLINGTON | LM395T | NAT | 4902-00-3950 | 2.000 |
| S01 | SWITCH,SLIDE,DPDT | 4021.0512 | MARQ | 5105-00-0011 | 1.000 |
| T01 | XFMR, PWR | 9058 | A-M | 5610-00-0029 | 1.000 |

| WAVETEK PARTS LIST | POWER SUPPLY,DPS10 | 1115-00-0017 PAGE: 1 | D REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 1.000 |
| C01 C08 | CAP,ELEC,50V,1500UF | WBR1500-50 | C-D | 1510-20-1152 | 2.000 |
| C02 C06 | CAP,DISC,100V,.005UF | TG-D50 | SPR | 1510-10-2502 | 2.000 |
| C03 C09 | CAP,ELEC,25V,100UF | TE1211 | SPR | 1510-20-4101 | 2.000 |
| C04 C05 C07 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 3.000 |
| C10 C11 | CAP,ELEC,16V,10000UF | D76381 | SPR | 1510-21-4103 | 2.000 |
| CR01 | DIODE BRIDGE | MDA101 | MOT | 4806-02-0003 | 1.000 |
| CR02 CR03 | DIODE BRIDGE | MDA970-2 | MOT | 4806-02-0004 | 2.000 |
| CR04 CR06 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| CR05 CR07 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| IC01 | VOLTAGE REFERENCE | REF-02CJ | PMI | 7000-00-0200 | 1.000 |
| IC02 | DUAL OP AMP | TL082CP | T-I | 7000-00-8200 | 1.000 |
| J03 J04 | CONN.,RECEPT.,3-PIN | 6-86105-3 | AMP | 2112-25-0001 | 2.000 |
| P01 P02 | 7-PIN LOCKING PLUG | 09-65-1071 | MOL | 2112-05-0007 | 2.000 |
| Q01 | JFET,N-CHANNEL | E232 | SCX | 4902-00-2320 | 1.000 |
| Q02 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 1.000 |
| R01 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R02 | RES,C,1/4W,5%,39K | CF1/4-39K | ASE | 4700-15-3902 | 1.000 |
| R03 | RES,MF,1/8W,1%,4.87K | RN55D-4.87K | MILSP | 4701-03-4871 | 1.000 |
| R04 R08 | POT,CERMET,200 | 89PR200 | BEK | 4610-00-2201 | 2.000 |
| R05 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 1.000 |
| R06 | RES,MF,1/8W,1%,13.0K | RN55D-13.0K | MILSP | 4701-03-1302 | 1.000 |
| R07 R09 | RES,MF,1/8W,1%,10K | RN55D-10K | MILSP | 4701-03-1002 | 2.000 |
| R10 R12 | RES,C,1/4W,5%,4.7K | CF1/4-4.7K | ASE | 4700-15-4701 | 2.000 |
| R11 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| R13 | RES,C,1/4W,5%,1.2K | CF1/4-1.2K | ASE | 4700-15-1201 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY,DPS10 | 1218-00-0170 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | TERM,FEMALE | 02-09-1118 | MOL | 2113-09-0003 | 5.000 |
| P01 | CORD SET,18/3SVT,6FT BK,MLD.CAP,UL-APPRV | 6011-80-0001 | ECMC | 6011-80-0001 | 1.000 |

| WAVETEK PARTS LIST | LINE CORD ASSY,DPS10 | 1219-40-0013 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 4 | HANDLE TRIM,4-7/16 REF:3210-06-0029 | 2810-07-0005 | W-I | 2810-07-0005 | 2.000 |
| 5 | SCW,SFH,4-40X3/8 | 2133NP | F-S | 2810-19-4106 | 4.000 |
| 6 | SCW,SOH,6-32X3/8 | 2332NP | F-S | 2810-21-6106 | 4.000 |
| 10 | SCW,SRH,4-40X1/4 | 2012NP | F-S | 2810-18-4104 | 5.000 |
| 11 | SCW,SRH,4-40X1/2 | 2016NP | F-S | 2810-18-4108 | 2.000 |
| 13 | BEZEL W/FILTER 4-IN. | 140-4 | RMF | 2410-08-0001 | 1.000 |
| 14 | LO,WASHER,INT,4 HW101-400 | 1331NP | F-S | 2810-24-4000 | 7.000 |

| WAVETEK PARTS LIST | FRONT PANEL, 1855 | 1118-00-0045 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C101 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| C102 | CAP,ELEC,10V,150UF | 503D157M025NB | SPR | 1510-20-8151 | 1.000 |
| CR101 CR102 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| CR103 CR104 CR105 CR106 CR107 CR108 CR109 CR110 CR111 CR112 CR113 CR114 CR115 | LED,RED,RECT | MV57124 | MNO | 4810-02-0004 | 13.000 |
| DS101 DS102 DS103 DS104 | LED DISPLAY,7-SEG.,.3 | MAN74A | MNO | 2410-03-0003 | 4.000 |
| IC101 IC102 | HEX D FLIP FLOP STATIC SENSITIVE | CD40174BE | RCA | 8004-01-7412 | 2.000 |
| IC103 IC104 IC105 IC106 | BCD/7-SEG DCDR STATIC SENSITIVE | CD4511DE | RCA | 8000-45-1112 | 4.000 |
| IC107 | HEX 3-ST INVERTER | 8T96 | SIG | 8000-08-9610 | 1.000 |
| IC108 | PO VOLTAGE REG. | UA7805UC | FCD | 7000-78-0523 | 1.000 |
| J101 | PC EDGE CONN,50-CKT | TP1-251-S04 | TEKA | 2112-27-0002 | 1.000 |
| Q101 Q102 Q103 Q104 Q105 Q106 Q107 Q108 Q109 Q110 | TRANS QA053-060 | 2N5306 | G-E | 4901-05-3060 | 10.000 |
| R101 R102 R103 R104 R105 R106 R107 R108 R109 R110 R111 R113 | RES,C,1/4W,5%,56 | CF1/4-56 | ASE | 4700-15-5609 | 12.000 |
| R112 | RES,C,1/4,5%,27 | CF1/4-27 | ASE | 4700-15-2709 | 1.000 |
| R115 R116 R117 R118 R119 R120 R121 R122 R123 R124 R125 R126 R127 R128 R129 R130 R131 R132 R133 R134 R135 R136 R137 R138 R139 R140 R141 R142 R146 | RES,1/4W,5%,130 | CF1/4-130 | ASE | 4700-15-1300 | 29.000 |
| R143 | RES NTWK,SIP,5-470K | 605-474K | EPITK | 4770-00-0010 | 1.000 |
| R144 | RES NTWK,SIP,9-470K | 109-474J | EPITK | 4770-00-0011 | 1.000 |
| R145 | RES NTWK,SIP,5-4.7K | 605-472J | EPITK | 4770-00-0003 | 1.000 |
| S101 S102 S103 S104 S105 S106 S107 S108 S109 S110 S111 S112 S113 S114 S115 S116 S117 S118 S119 S120 | SOLOD STATE SWITCH | 1001SD4A3S | MRO | 5111-00-0005 | 20.000 |

| WAVETEK PARTS LIST | FRONT PANEL PC, 1855 | 1218-00-0550 PAGE: 1 | B REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | TERMINAL,MALE | 02-09-2118 | MOL | 2113-09-0004 | 4.000 |
| P101 | PLUG | 19-09-2042 | MOL | 2113-26-0001 | 1.000 |
| S121 | SWITCH,TOGGLE DPDT | 9201P3HZQ | C-K | 5106-00-0016 | 1.000 |

| WAVETEK PARTS LIST | PWR SWITCH,16-1/2 | 1212-00-0011 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| J201 J301 J401 | PC EDGE CONN,56-CKT | TP1-251-S04 | TEKA | 2112-27-0002 | 3.000 |
| P101 | DS PC BD,ZZ484 | ZZ484 | W-I | 1710-00-2070 | 1.000 |

| WAVETEK PARTS LIST | MAIN BD 1, 1855 | 1218-00-0530 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| J402 J502 | PC EDGE CONN,56-CKT | TP1-281-S04 | TEKA | 2112-27-0003 | 2.000 |

| WAVETEK PARTS LIST | MAIN BD 2, 1855 | 1218-00-0540 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| J06 | DUAL MINI-LATCH HSG, 8-PIN | 65043-033 | BER | 2113-28-0002 | 1.000 |

| WAVETEK PARTS LIST | HARNESS, 1855 | 1219-00-0160 PAGE: 1 | C REV |
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| | | PAGE |
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| A/D DATA MEM CD | 1110-00-0080 | 66-67 |
| REG CTL CD | 1110-00-0100 | 68-69 |
| V/H TIMING CD | 1110-00-0110 | 70-71 |
| PS BOARD ½ | 1110-00-0210 | 72 |
| PS BOARD 3 | 1110-00-0220 | 73-74 |
| PS BOARD 4 | 1110-00-0230 | 75 |
| PS BOARD 5 | 1110-00-0240 | 76-77 |
| MOTHER BOARD | 1110-00-0320 | 78 |
| PRELIMINARY | 1111-40-0007 | 79 |
| DC BLOCK B904 | 1118-40-9016 | |
| CABLE ASSY, 5 ½ IN | 1217-70-0060 | 80 |
| CABLE ASSY, 3 ½ IN | 1217-70-0061 | |
| CABLE ASSY, 4 ½ IN | 1217-70-0065 | |
| PSK DEMODULATOR, M119-50 | 1114-00-0351 | 81 |
| MODULE ASSY, M119-50 | 1216-40-0027 | 82 |
| AMP BOARD, M119 | 1218-00-0430 | 83 |
| OSC BOARD, M119 | 1218-00-0440 | 84 |
| PHASE LOCK BD, M119 | 1218-00-0450 | 85-86 |
| RF AMP/ATTEN, M117-1 | 1114-00-9002 | 87 |
| MODULE ASSY, M117 | 1216-40-0023 | 88 |
| ATTEN PC BOARD, M117 | 1218-00-0390 | 89 |
| PROG PC BOARD, M117 | 1218-00-0400 | |
| AMP BOARD 1, M117 | 1218-00-0420 | 90 |
| AMP BOARD 2, M117 | 1218-00-0421 | 91 |
| DIFF BIAS DET, M118-1 | 1114-00-9003 | |
| MODULE ASSY, M118 | 1216-40-0025 | 92 |
| PC ASSEMBLY, M118 | 1218-00-0500 | 93-94 |
| DUMMY BASE, FOR M119 | 1118-00-0048 | 95 |
| FRONT PANEL ASSY | 1118-40-0043 | |
| SUN SHIELD ASSY | 1216-00-0013 | |

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| 65 HOUSING SUB ASSY | 1216-40-0018 | 96 |
| 65 COVER-HSG SUB ASSY | 1216-40-0019 | 97 |
| CHASSIS ASSY | 1216-40-0030 | 98 |
| CARD CG/MTHR BD ASSY | 1216-40-0032 | |
| MODULE HARNESS | 1219-00-0164 | |
| ATTENUATOR/KEYBOARD HRNSS | 1219-00-0165 | |
| OPTION HARNESS | 1219-00-0166 | 99 |
| ATTEN ASSY | 1219-00-0168 | |
| CRT ASSEMBLY | 1219-00-0172 | |
| BATT INTFC,BC2-1865 | 1019-00-0194 | 100 |
| BC-2 HEATER CORD SET | 1219-40-0089 | |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PV JUMPER | 65474-002 | BER | 2112-10-0002 | 6.000 |
| 2 | DS PC BD ZZ502A | ZZ502A | W-I | 1710-00-3030 | 1.000 |
| 3 | IC SKT, 22 PIN | C842202 | T-I | 2112-00-0025 | 2.000 |
| 4 | IC SKT,16 PIN MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 13.000 |
| 5 | IC SKT,PC,14 PIN MC000-073 | C931402 | T I | 2112-00-0011 | 7.000 |
| 6 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 1.000 |
| C401 C402 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 2.000 |
| C403 C404 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 2.000 |
| C405 C406 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 2.000 |
| C407 C408 C409 C410 C411 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 5.000 |
| C412 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| C413 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 1.000 |
| IC401 | QUAD NOR GATE STATIC SENSITIVE | MC14001BCP | MOT | 8001-40-0110 | 1.000 |
| IC402 IC413 IC422 | QUAD POS. NAND | SN74LS01 | T-I | 8000-74-0110 | 3.000 |
| IC403 IC404 | QUAD D FLIP-FLOP STATIC SENSITIVE | MC74HC175N | MOT | 8007-41-7511 | 2.000 |
| IC405 IC407 | DAC,8-BIT | DAC-08EQ | AMD | 8000-00-0800 | 2.000 |
| IC406 | VOLTAGE REF | REF-01CJ | PMI | 7000-00-0100 | 1.000 |
| IC408 | VOLTAGE COMPARATOR | AM686CN | AMD | 8000-06-8600 | 1.000 |
| IC409 | REGISTER, 8/12 BIT, 5-A | AM2502PC | AMD | 8000-25-0200 | 1.000 |
| IC410 | HEX FLIP-FLOP STATIC SENSITIVE | MC74HC174N | MOT | 8007-41-7412 | 1.000 |
| IC411 IC412 | QUAD POS NAND STATIC SENSITIVE | MC74HC00N | MOT | 8000-74-0012 | 2.000 |
| IC414 IC415 | SYNC 4-BIT COUNTER STATIC SENSITIVE | MC74HC161N | MOT | 8007-41-6110 | 2.000 |
| IC416 IC417 | RAM, STATIC SENS. | CDP1822CE | RCA | 8000-18-2210 | 2.000 |
| IC418 IC419 | QUAD 2/1 MUX STATIC SENSITIVE | CD40257BE | RCA | 8004-02-5710 | 2.000 |
| IC420 IC421 | BUS BUFFER, 4-BIT STATIC SENSITIVE | CDP1856CE | RCA | 8000-18-5610 | 2.000 |
| IC423 | DUAL MMV STATIC SENSITIVE | MM74HC123N | NAT | 8007-41-2311 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| IC424 | DUAL D, FLIP-FLOP STATIC SENSITIVE | MC14013BCP | MOT | 8001-40-1310 | 1.000 |
| P401 P402 P404 P405 | HDR,RA,3-PIN REF:2112-08-0000 | 2112-08-0018 | W-I | 2112-08-0018 | 4.000 |
| P403 P406 | HEADER,R.ANGLE,2-PIN REF:2112-08-0000 | 2112-08-0009 | W-I | 2112-08-0009 | 2.000 |
| R401 R418 R425 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 3.000 |
| R402 | RES,C,1/4W,5%,24K | CF1/4-24K | ASE | 4700-15-2402 | 1.000 |
| R403 R413 R416 | RES,MF,1/8W,1%,4.99K | RN55D-4.99K | MILSP | 4701-03-4991 | 3.000 |
| R404 | RES,C,1/4W,5%,510K | CF1/4-510K | ASE | 4700-15-5103 | 1.000 |
| R405 R406 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R407 R408 R409 R410 | RES,C,1/4W,5%,150 | CF1/4-150 | ASE | 4700-15-1500 | 4.000 |
| R411 R412 R414 R415 | RES,MF,1/8W,1%,2.49K | RN55D-2.49K | MILSP | 4701-03-2491 | 4.000 |
| R417 | RES NTWK,SIP,9-4.7K | 109-472J | EPITK | 4770-00-0014 | 1.000 |
| R419 R420 | RES NTWK,SIP,5-4.7K | 605-472J | EPITK | 4770-00-0003 | 2.000 |
| R421 R422 | RES NTWK,SIP,9-470K | 109-474J | EPITK | 4770-00-0011 | 2.000 |
| R423 | RES,C,1/4W,5%,470K | CF1/4-470K | ASE | 4700-15-4703 | 1.000 |
| R424 R428 R429 R430 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 4.000 |
| R426 | POT,100K,RP130-410 | 89PR100K | BEK | 4610-00-2104 | 1.000 |
| R427 | RES,C,1/4W,5%,220K | CF1/4220K | ASE | 4700-15-2203 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PC BUS BAR, 16-PIN | ECI6102-3-8.3 | ELDRE | 2112-28-0009 | 1.000 |
| 2 | PC BUS BAR, 10-PIN | ECI6102-3-5.3 | ELDRE | 2112-28-0004 | 1.000 |
| 3 | IC SKT,PC,14 PIN MC000-073 | C931402 | T-I | 2112-00-0011 | 7.000 |
| 4 | IC SKT,16 PIN MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 19.000 |
| 6 | DS PC BD ZZ500 | ZZ500 | W-I | 1710-00-3010 | 1.000 |
| C201 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 1.000 |
| C202 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| C203 | CAP,DISC,1KV,250PF | 10TS-T25 | SPR | 1510-10-1251 | 1.000 |
| CR201 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 1.000 |
| IC201 IC202 IC203 IC204 IC205 IC206 IC207 IC208 IC209 IC210 IC211 IC212 IC223 IC224 | QUAD D, REGISTER STATIC SENSITIVE | MC14076BAP | MOT | 8001-40-7610 | 14.000 |
| IC213 | DUAL J-K FLIP-FLOP STATIC SENSITIVE | MC74HC109N | MOT | 8007-41-0910 | 1.000 |
| IC214 | SYNC 4-BIT COUNTER STATIC SENSITIVE | MC74HC161N | MOT | 8007-41-6110 | 1.000 |
| IC215 | HEX INVERTER STATIC SENSITIVE | MC14069BP | MOT | 8001-40-6912 | 1.000 |
| IC216 IC217 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 2.000 |
| IC218 | N-BIT,1 OF 8 DECODER STATIC SENSITIVE | CDP1853CE | RCA | 8000-18-5310 | 1.000 |
| IC219 | QUAD AND GATE STATIC SENSITIVE | MC14081BCP | MOT | 8001-40-8110 | 1.000 |
| IC220 | QUAD POS NAND STATIC SENSITIVE | MC74HC00N | MOT | 8000-74-0012 | 1.000 |
| IC221 | DUAL D, FLIP-FLOP STATIC SENSITIVE | MC14013BCP | MOT | 8001-40-1310 | 1.000 |
| IC222 IC225 | SYNC 4-BIT UP/DN CTR | SN74LS169N | T-I | 8007-41-6910 | 2.000 |
| IC226 | HEX INVERTER, STATIC SENSITIVE | MC74HC04N | MOT | 8000-74-0411 | 1.000 |
| J201 | PV JUMPER | 65474-002 | BER | 2112-10-0002 | 1.000 |
| P201 | HDR,RA,3-PIN REF:2112-08-0000 | 2112-08-0018 | W-I | 2112-08-0018 | 1.000 |
| R201 R202 | RES NTWK,SIP,9-470K | 109-474J | EPITK | 4770-00-0011 | 2.000 |
| R203 R204 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 2.000 |
| R205 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R206 | RES,C,1/4W,5%,470K | CF1/4-470K | ASE | 4700-15-4703 | 1.000 |
| SW201 | SWITCH,SLIDE | 1101M2AB | C-K | 5105-00-0010 | 1.000 |

| WAVETEK PARTS LIST | REG CTL CD,1865 | 1110-00-0100 PAGE: 2 | D REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | IC SOCKET,20-PIN | C842002 | T-I | 2112-00-0020 | 3.000 |
| 3 | IC SKT,16 PIN<br>MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 20.000 |
| 4 | IC SKT,PC,14 PIN<br>MC000-073 | C931402 | T I | 2112-00-0011 | 5.000 |
| 5 | DS PC BD ZZ499B | ZZ499B | W I | 1710-00-3000 | 1.000 |
| C101 | CAP,MICA,500V,100PF | DM15-101J | C-D | 1510-50-0101 | 1.000 |
| C102 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| C103 C104 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 2.000 |
| C105 | CAP,DISC,1KV,15PF | 10TCC-Q15 | SPR | 1510-10-0150 | 1.000 |
| IC100 | PROM,1865,IC000<br>FROM:8007-44-7100 | 8410-00-0005 | W-I | 8410-00-0005 | 1.000 |
| IC101 IC103 IC104 IC107<br>IC123 IC124 IC126 IC127 | SYNC 4-BIT COUNTER<br>STATIC SENSITIVE | MC74HC161N | MOT | 8007-41-6110 | 8.000 |
| IC102 | PROM,1865,IC102<br>FROM:8007-44-7200 | 8410-00-0006 | W-I | 8410-00-0006 | 1.000 |
| IC105 IC106 | QUAD D FLIP-FLOP<br>STATIC SENSITIVE | MC74HC175N | MOT | 8007-41-7511 | 2.000 |
| IC108 IC109 IC111 IC112<br>IC116 | BIN, 4-BIT, CTR.<br>STATIC SENSITIVE | MC14161BCP | MOT | 8001-41-6110 | 5.000 |
| IC110 | QUAD AND GATE<br>STATIC SENSITIVE | MC14081BCP | MOT | 8001-40-8110 | 1.000 |
| IC113 | HEX INVERTER | SN74LS05N | T-I | 8000-74-0510 | 1.000 |
| IC114 | QUAD POS NAND<br>STATIC SENSITIVE | MC74HC00N | MOT | 8000-74-0012 | 1.000 |
| IC115 | PROM,1865,IC115<br>FROM:8007-44-7200 | 8410-00-0007 | W-I | 8410-00-0007 | 1.000 |
| IC117 | DATA SEL/MPXR<br>STATIC SENSITIVE | MM74HC151N | NAT | 8007-41-5111 | 1.000 |
| IC118 | QUAD POS. NAND | SN7400 | T I | 8000-74-0001 | 1.000 |
| IC119 | QUAD NAND<br>STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| IC120 IC121 IC122 IC125 | QUAD 2-INPUT MUX<br>STATIC SENSITIVE | MC74HC157N | MOT | 8007-41-5712 | 4.000 |
| Q101 Q102 Q103 Q104 Q105<br>Q106 Q107 Q108 Q109 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 9.000 |
| R101 R103 | RES,C,1/4W,5%,3.3K | CF1/4-3.3K | ASE | 4700-15-3301 | 2.000 |
| R102 R104 | RES,C,1/4W,5%,1.2K | CF1/4-1.2K | ASE | 4700-15-1201 | 2.000 |
| R105 R109 R110 R111 R146 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 5.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R106 R108 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 2.000 |
| R107 R149 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R112 R117 R120 R124 R128 R132 R137 R139 R143 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 9.000 |
| R113 R115 R119 R125 R127 R133 R135 R140 R142 | RES,C,1/4W,5%,270 | CF1/4-270 | ASE | 4700-15-2700 | 9.000 |
| R114 R116 R121 R126 R129 R134 R136 R141 R144 | RES,C,1/4W,5%,68 | CF1/4-68 | ASE | 4700-15-6809 | 9.000 |
| R118 R122 R123 R130 R131 R138 R145 R147 R148 | POT,1K,RP130-210 | 89PR1K | BEK | 4610-00-2102 | 9.000 |
| X1 | CRYSTAL, 7.16850 MHZ | X32W-7.16850 | W-I | 2310-00-0891 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C03 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 2.000 |
| C02 C04 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C05 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C06 | CAP,TANT,25V.10UF | TIM106K025P0V | MAL | 1510-21-6100 | 1.000 |
| C07 C08 C09 C10 C11 C12 C13 C14 | CAP,TANT,10V,220UF | T310D227-010AS | UNCAR | 1510-22-5221 | 8.000 |
| CR01 CR02 CR03 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 3.000 |
| F01 | FUSE,SLO-BLO,1-AMP | 301001 | LIT | 2410-05-1008 | 1.000 |
| IC01 | DUAL OP AMP,MOT | MC1458CP1-MOT | MOT | 7000-14-5801 | 1.000 |
| IC02 | SWITCHMODE REGULATOR | MC3420P | MOT | 7000-34-2000 | 1.000 |
| IC03 | SWITCH REG | PIC 00 | UNIT | 7000-06-0000 | 1.000 |
| L01 | TORROID, 270-UH FROM:1810-00-0014 | 1810-06-2700 | W-I | 1810-06-2700 | 1.000 |
| Q01 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 1.000 |
| Q02 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 1.000 |
| R01 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 1.000 |
| R02 | POT 5K FROM:4610-00-7502 | 4610-00-5202 | W-I | 4610-00-4502 | 1.000 |
| R03 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R04 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R05 R07 R08 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 3.000 |
| R06 R10 R14 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 3.000 |
| R09 R11 R12 R17 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 4.000 |
| R13 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 1.000 |
| R15 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 1.000 |
| R16 | RES,MF,1/8W,1%,13.0K | RN55D-13.0K | MILSP | 4701-03-1302 | 1.000 |
| R18 | RES,C,1/4W,5%,330 | CF1/4-330 | ASE | 4700-15-3300 | 1.000 |
| R19 | RES,WW,3W,5%,0.3-OHM | 43JR30 | OHM | 4702-55-3007 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C02 C04 C07 C08 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 5.000 |
| C03 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C05 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C06 | CAP,TANT,25V,10UF | TIM106K025P0V | HAL | 1510-21-6100 | 1.000 |
| C09 C10 C11 C12 | CAP,TANT,35V,47UF | T310D476-035AS | UNCAR | 1510-22-4470 | 4.000 |
| C13 C14 C15 C16 | CAP,TANT,10V,220UF | T310D227-010AS | UNCAR | 1510-22-5221 | 4.000 |
| CR01 CR02 CR03 CR04 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 4.000 |
| CR05 CR06 | DIODE,RECT,50V | IN5802 | UNIT | 4806-01-5802 | 2.000 |
| F01 | FUSE,SLO-BLO,1-AMP | 301001 | LIT | 2410-05-1006 | 1.000 |
| IC01 IC03 | DUAL OP AMP,MOT | MC1458CP1-MOT | MOT | 7000-14-5801 | 2.000 |
| IC02 | SWITCHMODE REGULATOR | MC3420P | MOT | 7000-34-2000 | 1.000 |
| IC04 | HEX INVERTER STATIC SENSITIVE | MC14069BP | MOT | 8001-40-6912 | 1.000 |
| L01 L02 | TORROID, 135-UH FROM:1810-00-0013 | 1810-06-1350 | W-I | 1810-06-1350 | 2.000 |
| Q01 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 1.000 |
| Q02 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 1.000 |
| Q03 | TRANS QA040-300 | 2N4030 | NAT | 4901-04-0300 | 1.000 |
| Q04 | POWER,FET SCX VN46AF SCX, STATIC SENS. | VN46AF | SCX | 4902-00-0460 | 1.000 |
| R01 R15 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 2.000 |
| R02 | POT 5K FROM:4610-00-7502 | 4610-00-5202 | W-I | 4610-00-4502 | 1.000 |
| R03 R09 R11 R12 R17 R18 R21 R22 R23 R26 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 10.000 |
| R04 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R05 R27 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 2.000 |
| R06 R07 R10 R14 R19 R24 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 6.000 |
| R08 | RES,C,1/4W,5%,68K | CF1/4-68K | ASE | 4700-15-6802 | 1.000 |
| R13 R29 R30 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 3.000 |
| R16 | RES,MF,1/8W,1%,13.0K | RN55D-13.0K | MILSP | 4701-03-1302 | 1.000 |
| R20 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R25 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 1.000 |
| R28 | POT,2K,RP144-220 FROM:4610-00-7202 | 4610-00-4202 | W-I | 4610-00-4202 | 1.000 |

| WAVETEK PARTS LIST | PS BOARD 3, 1865 | 1110-00-0220 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R31 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R32 R33 | RES,WW,3W,5%,0.3-OHM | 43JR30 | OHM | 4702-55-3007 | 2.000 |

| WAVETEK PARTS LIST | PS BOARD 3, 1865 | 1110-00-0220 PAGE: 2 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C02 C04 C07 C08 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 5.000 |
| C03 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C05 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C06 | CAP,TANT,25V.10UF | TIM106K025P0V | MAL | 1510-21-6100 | 1.000 |
| C09 C10 C11 C12 C13 C14 C15 C16 | CAP,TANT,20V,100UF | T310D107-020AS | UNCAR | 1510-22-3101 | 8.000 |
| CR01 CR02 CR03 CR04 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 4.000 |
| CR05 CR06 | DIODE,RECT,50V | IN5802 | UNIT | 4806-01-5802 | 2.000 |
| F-01 | FUSE, AGA,32V 2AMP | AGA-2 | BUS | 2410-05-0030 | 1.000 |
| IC01 IC03 | DUAL OP AMP,MOT | MC1458CP1-MOT | MOT | 7000-14-5801 | 2.000 |
| IC02 | SWITCHMODE REGULATOR | MC3420P | MOT | 7000-34-2000 | 1.000 |
| IC04 | HEX INVERTER STATIC SENSITIVE | MC14069BP | MOT | 8001-40-6912 | 1.000 |
| L01 L02 | TORROID, 135-UH FROM:1810-00-0013 | 1810-06-1350 | W-I | 1810-06-1350 | 2.000 |
| Q01 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 1.000 |
| Q02 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 1.000 |
| Q03 | TRANS QA040-300 | 2N4030 | NAT | 4901-04-0300 | 1.000 |
| Q04 | POWER,FET SCX VN46AF SCX, STATIC SENS. | VN46AF | SCX | 4902-00-0460 | 1.000 |
| R01 R15 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 2.000 |
| R02 R28 | POT 5K FROM:4610-00-7502 | 4610-00-5202 | W-I | 4610-00-4502 | 2.000 |
| R03 R09 R11 R12 R17 R18 R21 R22 R23 R26 R27 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 11.000 |
| R04 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R05 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 1.000 |
| R06 R07 R10 R14 R19 R24 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 6.000 |
| R08 | RES,C,1/4W,5%,68K | CF1/4-68K | ASE | 4700-15-6802 | 1.000 |
| R13 R29 R30 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 3.000 |
| R16 | RES,MF,1/8W,1%,13.0K | RN55D-13.0K | MILSP | 4701-03-1302 | 1.000 |
| R20 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R25 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 1.000 |
| R31 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R32 R33 | RES,WW,3W,5%,0.3-OHM | 43JR30 | OHM | 4702-55-3007 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C04 C06 C14 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 4.000 |
| C02 | CAP,TANT,25V.10UF | TIM106K025P0V | MAL | 1510-21-6100 | 1.000 |
| C03 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C05 | CAP,DISC,1KV,.005UF | 5GA-D50 | CPR | 1510-10-1502 | 1.000 |
| C07 C08 C09 C10 | CAP,TANT,16V,150UF | T353M157K016AS | UNCAR | 1510-22-6151 | 4.000 |
| C11 C12 C13 | CAP,TANT,25V,68UF | T353L686K025AS | UNCAR | 1510-22-7680 | 3.000 |
| CR01 CR02 CR03 CR05 CR06 CR07 CR08 CR09 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 8.000 |
| CR04 | DIODE,RECT,50V | IN5802 | UNIT | 4806-01-5802 | 1.000 |
| F01 | FUSE,SLO-BLO,5-AMP | 301-005 | LIT | 2410-05-1008 | 1.000 |
| IC01 IC04 | DUAL OP AMP,MOT | MC1458CP1-MOT | MOT | 7000-14-5801 | 2.000 |
| IC02 | SWITCHMODE REGULATOR | MC3420F | MOT | 7000-34-2000 | 1.000 |
| IC03 | SWITCHING REGULATOR | PIC 610 | UNIT | 7000-06-1000 | 1.000 |
| K01 K02 | RELAY,SEALED,12VDC | HB1E-DC12V | ARW-M | 4510-00-0007 | 2.000 |
| L01 | TORROID, 270-UH FROM:1810-00-0014 | 1810-06-2700 | W-I | 1810-06-2700 | 1.000 |
| Q01 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 1.000 |
| Q02 | TRANS QA040-300 | 2N4030 | NAT | 4901-04-0300 | 1.000 |
| Q03 Q04 Q05 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 3.000 |
| R01 R18 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 2.000 |
| R02 | POT 5K FROM:4610-00-7502 | 4610-00-5202 | W-I | 4610-00-4502 | 1.000 |
| R03 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 1.000 |
| R04 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R05 R07 R10 R32 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 4.000 |
| R06 R09 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 2.000 |
| R08 | RES,MF,1/8W,1%,13.0K | RN55D-13.0K | MILSP | 4701-03-1302 | 1.000 |
| R11 R12 R16 R34 R38 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 5.000 |
| R13 | RES,C,1/4W,5%,560 | CF1/4-560 | ASE | 4700-15-5600 | 1.000 |
| R14 R22 R41 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 3.000 |
| R15 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 1.000 |
| R17 | RES,C,1/4W,5%,8.2K | CF1/4-8.2K | ASE | 4700-15-8201 | 1.000 |
| R19 | RES,C,1/4W,5%,75K | CF1/4-75K | ASE | 4700-15-7502 | 1.000 |
| R20 | RES,C,1/4W,5%,180K | CF1/4-180K | ASE | 4700-15-1803 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R21 | RES,C,1/8W,5%,1M | CF1/8-1M | ASE | 4700-05-1004 | 1.000 |
| R23 R25 R29 R31 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 4.000 |
| R24 | POT,20K,RP144-320<br>FROM:4610-00-7203 | 4610-00-4203 | W-I | 4610-00-4203 | 1.000 |
| R26 R33 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 2.000 |
| R27 R39 | RES,C,1/4W,5%,200K | CF1/4-200K | ASE | 4700-15-2003 | 2.000 |
| R28 | RES,C,1/4W,5%,51K | CF1/4-51K | ASE | 4700-15-5102 | 1.000 |
| R30 | RES,C,1/4W,5%,1M | CF1/4-1M | ASE | 4700-15-1004 | 1.000 |
| R35 | RES,WW,3W,5%,0.3-OHM | 43JR30 | OHM | 4702-55-3007 | 1.000 |
| R36 R37 | RES,C,1/4W,5%,33 | CF1/4-33 | ASE | 4700-15-3309 | 2.000 |
| R40 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | DS PC BD ZZ498B | ZZ498B | W-I | 1710-00-2090 | 1.000 |
| 9 | FERR. BEAD,LC000-009 | KS-001-00/3B | FRXC | 1813-00-0007 | 80.000 |
| 12 | SCW,SBH,4-40X3/16 | 4021NP-3/16 | F-S | 2810-17-4103 | 2.000 |
| 13 | LO,WASHER,INT,4 HW101-400 | 1331NP | F-S | 2810-24-4000 | 2.000 |
| C01 C02 C03 C04 C05 C06 C07 C08 C09 C10 C11 C12 C13 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 13.000 |
| J01 J11 J12 J19 J20 J21 J22 J23 | PC EDGE CONN,24-CKT | TP3-121-S04 | TEKA | 2112-27-0005 | 8.000 |
| J02 J03 J04 J05 J06 J07 J08 | PC EDGE CONN,50-CKT | TP1-251-S04 | TEKA | 2112-27-0002 | 7.000 |
| L01 L02 L03 L04 L05 L06 L07 L08 L09 L10 L11 L12 L13 L14 L15 L16 | RF CHOKE,REF ONLY | CHOKE | W-I | 1819-99-9999 | 16.000 |
| P14 | HDR,RA,18-PIN REF:2112-08-0005 | 2112-08-0015 | W-I | 2112-08-0015 | 1.000 |
| P15 P17 | HDR,,RA,14-PIN REF:2112-08-0000 | 2112-08-0016 | W-I | 2112-08-0016 | 2.000 |
| P16 | HEADER,R.ANGLE,8-PIN REF:2112-08-0000 | 2112-08-0006 | W-I | 2112-08-0006 | 1.000 |
| P18 | HEADER,R.ANGLE,2-PIN REF:2112-08-0000 | 2112-08-0009 | W-I | 2112-08-0009 | 1.000 |
| P25 | PLUG,RA,4-PIN | 09-75-1041 | MOL | 2112-06-0006 | 1.000 |

| WAVETEK PARTS LIST | MOTHER BOARD, 1865 | 1110-00-0320 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| B904 | DC BLOCK B904 | B904 | W-I | 1118-40-9016 | 1.000 |
| W01 | CABLE ASSY 6IN | WXB904 | W-I | 1217-70-9014 | 1.000 |
| W02 | CABLE ASSY, 5 1/2 IN | 1217-70-0060 | W-I | 1217-70-0060 | 1.000 |
| W03 | CABLE ASSY, 4 1/4 IN | WX1865-W3 | W-I | 1217-70-0065 | 1.000 |
| W04 W05 | CABLE ASSY, 3 1/2 IN | WX1865-W4 | W-I | 1217-70-0061 | 2.000 |

| WAVETEK PARTS LIST | PRELIMINARY,1865B | 1111-40-0007 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | INSRT,BNC,M,75 OHM PER B/P | 1414-00-0019 | W-I | 1414-00-0019 | 1.000 |
| 2 | COVER,DC BLOCK B904 | 1414-00-9042 | W-I | 1414-00-9042 | 1.000 |
| 3 | CAN,.734X2.172X.73 STEEL,HOT TIN DIP | HU-5361-ST | HUD | 3210-08-0022 | 1.000 |
| 4 | DECAL, DC BLOCK B904 | 2414-01-1001 | W-I | 2414-01-1001 | 1.000 |
| 5 | CABLE, COAX,RG302/U | RG302/U | TIMES | 6011-40-0019 | 2.000 |
| C1 C2 | CAP,DISC,1KV,.003UF | 5GA-D30 | SPR | 1510-10-1302 | 2.000 |
| L01 | CHOKE,COATED,10UH | 08N100 | JEF | 1810-03-0100 | 1.000 |
| P1 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 1.000 |
| P2 | CONN,BNC-M,75,CABLE | 28P189-2 | S-C | 2110-01-0002 | 1.000 |

| WAVETEK PARTS LIST | DC BLOCK B904 | 1118-40-9016 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN,BNC-M,75,CABLE | 28P189-1 | S-C | 2110-01-0001 | 2.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 5 1/2 IN | 1217-70-0060 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 2.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 3 1/2 IN | 1217-70-0061 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 1.000 |
| 2 | CONN,BNC-M,75,CABLE | 28P189-1 | S-C | 2110-01-0001 | 1.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 4 1/4 IN | 1217-70-0065 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 10 | COVER PER B/P | A001-910 | W-I | 1410-00-2380 | 1.000 |
| 11 | COVER PER B/P | A001-911 | W-I | 1410-00-2390 | 1.000 |
| 16 | SCW,SBH,2-56X3/16 | 4001NP | F-S | 2810-17-2103 | 15.000 |
| 17 | LOWASHER,INT 2 | 1330NP | F-S | 2810-24-2000 | 15.000 |
| 23 | FISHPAPER;PHASE LOCK PER B/P | A001-963 | W-I | 1410-00-9440 | 1.000 |
| 24 | FISHPAPER; BANDPASS PER B/P | A001-964 | W-I | 1410-00-9450 | 1.000 |
| 25 | OSC FISH PAPER B/P | A001-965 | W-I | 1410-00-9460 | 1.000 |
| C01 C02 C03 | CAP,FT,500V,2200PF | 4420-2200PF | AER | 1510-31-1222 | 3.000 |
| C04 C05 | CAP,FT,500V,4.7PF | 4420-4.7PF | AER | 1510-31-4479 | 2.000 |
| C13 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| CR01 CR02 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| L01 | TORDID,10T,1-1/2L | LA009-010-2 | W-I | 1810-05-0005 | 1.000 |
| L02 L03 | TORDID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L04 | CHOKE,COATED,47UH | 08N470 | JEF | 1810-03-0470 | 1.000 |
| MX01 | MIXER,DBL.BALANCED | CM-1 | VARIL | 3010-54-0001 | 1.000 |
| R01 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| ZA01 | AMP BOARD, M119 | M119-50-AMP BD | W-I | 1218-00-0430 | 1.000 |
| ZA02 | OSC BOARD, M119 | M119-50-OSC BD | W-I | 1218-00-0440 | 1.000 |
| ZA03 | PHASE LOCK BD, M119 | M119-PH LK BD | W-I | 1218-00-0450 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | FRAME,M119-50<br>FROM:1410-30-0700 | 1414-30-1035 | W-I | 1414-30-1035 | 1.000 |
| 2 | INT,LOWASHER,6<br>HW101-600 | 1304ZP | F-S | 2810-24-6000 | 1.000 |
| 3 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 1.000 |
| 4 | BASE,M119<br>FROM:3210-08-0033 | 1414-30-1018 | W-I | 1414-30-1018 | 1.000 |
| 5 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 8 | SCW,SBH,6-32X3/16 | 6-32X3/16,BH,MF | S-S | 2810-17-6103 | 1.000 |
| 9 | PSK DEMOD CHASSIS<br>CTR PLATE B/P | 1410-30-1690 | W-I | 1410-30-1690 | 1.000 |
| 12 | SHIELD PER B/P | A001-912 | W-I | 1410-00-2430 | 1.000 |
| 13 | SHIELD PER B/P | A001-913 | W-I | 1410-00-2440 | 1.000 |
| 14 | SHIELD PER B/P | A01-915 | W-I | 1410-00-2480 | 1.000 |
| 18 | STANDOFF, SWAGE,<br>3/16 X 1/8 | SS151-1A-17 | UNIC | 2810-05-0009 | 15.000 |
| 26 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 3.000 |
| 27 | CAP,FT,500V,1000PF | 54-794-010-102F | SPEC | 1510-30-8102 | 3.000 |

| WAVETEK PARTS LIST | MODULE ASSY,M119-50 | 1216-40-0027<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C101 C110 C113 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 3.000 |
| C102 C111 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 2.000 |
| C103 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C104 C112 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C105 | CAP,DISC,1KV,25PF | 60C0G250J | MDC | 1510-10-0250 | 1.000 |
| C106 C108 | CAP,COMP,500V,.47PF | MC-.47PF | Q-C | 1510-40-1478 | 2.000 |
| C107 | CAP,DISC,1KV,20PF | 60C0G200J | MDC | 1510-10-0200 | 1.000 |
| C109 | CAP,DISC,1KV,15PF | 10TCC-Q15 | SPR | 1510-10-0150 | 1.000 |
| L101 L107 | TORDID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L102 | COIL,AIR,9T,.200 ID | 9T,PER SPEC. | ATR | 1815-00-0006 | 1.000 |
| L103 | COL,AIR,6T,.200 ID | 6T,PER SPEC. | ATR | 1815-00-0004 | 1.000 |
| L104 | COIL,AIR,16T,.200 ID | 16T,PER SPEC. | ATR | 1815-00-0009 | 1.000 |
| L105 | COIL,AIR,19T,.200 ID | 19T,PER SPEC. | ATR | 1815-00-0010 | 1.000 |
| L106 | COIL,AIR,2T,0.200 ID | 2T,PER SPEC. | ATR | 1815-00-0001 | 1.000 |
| Q101 Q102 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 2.000 |
| R101 | RES,C,1/8W,5%,6.8K | CF1/8-6.8K | ASE | 4700-05-6801 | 1.000 |
| R102 R106 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 2.000 |
| R103 R107 | RES,C,1/8W,5%,10 | CF1/8-10 | ASE | 4700-05-1009 | 2.000 |
| R104 R108 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R105 | RES,C,1/8W,5%,240 | CF1/8-240 | ASE | 4700-05-2400 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C201 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| C202 C203 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 2.000 |
| C204 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 1.000 |
| C205 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 1.000 |
| C206 | CAP,MICA,300V,15PF | DM-5CC150J | ARC | 1510-50-1150 | 1.000 |
| C207 | CAP,MICA,300V,47PF | ADM-5-470J | ARC | 1510-50-1470 | 1.000 |
| C208 | CAP,MICA,300V,5PF | DM-5CC050D | ARC | 1510-50-1509 | 1.000 |
| C209 | CAP,MICA,300V,10PF | DM-5CC100J | ARC | 1510-50-1100 | 1.000 |
| C210 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 1.000 |
| CR201 | DIODE,VARACTOR | BB205B | APX | 4803-02-0004 | 1.000 |
| L201 L202 | TOROID,10T,1-1/4L | LA009-010-1 | M-I | 1810-05-0004 | 2.000 |
| L203 | COIL,AIR,16T,.200 ID | 16T,PER SPEC. | ATR | 1815-00-0009 | 1.000 |
| L204 | COIL,AIR,3T,.200 ID | 3T,PER SPEC. | ATR | 1815-00-0002 | 1.000 |
| Q201 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| R201 | RES,C,1/8W,5%,9.1K | CF1/8-9.1K | ASE | 4700-05-9101 | 1.000 |
| R202 | RES,C, 1/8W,5%, 5.1K | CF 1/8 -5.1 K | ASE | 4700-05-5101 | 1.000 |
| R203 | RES.1/8W,5,330 | CF1/8-330 | ASE | 4700-05-3300 | 1.000 |
| R204 | RES,C,1/8W,5%,47 | CF1/8-47 | ASE | 4700-05-4709 | 1.000 |
| R205 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 1.000 |
| R206 R208 | RES.C.1/8W 5% 470 | CF1/8-470 | ASE | 4700-05-4700 | 2.000 |
| R207 | RES,C,1/8W,5%,27 | CF1/8-27 | ASE | 4700-05-2709 | 1.000 |
| R209 | RES,C,1/8W,5%,1.8K | CF1/8-1.8K | ASE | 4700-05-1801 | 1.000 |

| WAVETEK PARTS LIST | OSC BOARD, M119 | 1218-00-0440 PAGE: 1 | E REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C301 C302 | CAP,MICA,100V,250PF | ADM-10CA251J | ARC | 1510-50-5251 | 2.000 |
| C303 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C304 C305 C307 C312 C313 C315 C316 C318 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 8.000 |
| C306 C308 C309 C310 C317 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 5.000 |
| C311 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C314 | CAP,DISC,1KV,270PF | 60U271M | MDC | 1510-10-1271 | 1.000 |
| C319 C320 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 2.000 |
| C321 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| CR301 CR302 CR303 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 3.000 |
| IC301 | IF AMP | MC1350P | MOT | 7000-13-5000 | 1.000 |
| IC302 | PHASE DETECTOR | MC4044P | MOT | 8000-40-4400 | 1.000 |
| IC303 | OP AMP,DUAL,3MHZ | NE5530 | SIG | 7000-55-3000 | 1.000 |
| IC304 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| L301 L303 | CHOKE,COATED,6.8UH | 08N6R8 | JEF | 1810-03-0689 | 2.000 |
| L302 | CHOKE,COATED,3.9UH | 08N3R9 | JEF | 1810-03-0399 | 1.000 |
| L304 L305 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| Q301 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| Q302 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 1.000 |
| R301 | RES,C,1/4W,5%,2.7K | CF1/4-2.7K | ASE | 4700-15-2701 | 1.000 |
| R301 | RES,C,1/4W,5%,7.5K | CF1/4-7.5K | ASE | 4700-15-7501 | 1.000 |
| R302 R309 R323 R324 R329 R331 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 6.000 |
| R303 R315 R332 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 3.000 |
| R304 R311 R319 R325 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 4.000 |
| R305 | RES,C,1/4W,5%,5.6K | CF1/4-5.6K | ASE | 4700-15-5601 | 1.000 |
| R306 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R307 | RES,C,1/4W,5%,200 | CF1/4-200 | ASE | 4700-15-2000 | 1.000 |
| R308 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 1.000 |
| R310 | RES,C,1/4W,5%,180 | CF1/4-180 | ASE | 4700-15-1800 | 1.000 |
| R312 R314 | RES,MF,1/8W,1%,1K | RN55D-1K | MILSP | 4701-03-1001 | 2.000 |
| R313 | RES,C,1/4W,5%,2.7 | CF1/4-2.7 | ASE | 4700-15-2708 | 1.000 |
| R316 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R317 | POT,2K,RP144-220<br>FROM:4610-00-7202 | 4610-00-4202 | W-I | 4610-00-4202 | 1.000 |
| R318 | RES,C,1/4W,5%,27K | CF1/4-27K | ASE | 4700-15-2702 | 1.000 |
| R321 | RES,MF,1/8W,1%,4.99K | RN55D-4.99K | MILSP | 4701-03-4991 | 1.000 |
| R322 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R326 | RES,MF,1/8W,1%,11.3K | RN55D-11.3K | MILSP | 4701-03-1132 | 1.000 |
| R327 | RES,MF,1/8W,1%,1.50K | RN55D-1.50K | MILSP | 4701-03-1501 | 1.000 |
| R328 R330 | RES,C,1/8W,5%,100K | CF1/8-100K | ASE | 4700-05-1003 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 8 | AMP BOARD 1, M117 | M117-AMP BD 1 | W-I | 1218-00-0420 | 1.000 |
| 10 | SHIELD,RF PER B/P | A001-922 | W-I | 1410-00-9050 | 1.000 |
| 11 | ATTEN PC BOARD, M117 | M117-ATT BD | W-I | 1218-00-0390 | 1.000 |
| 12 | SHIELD PER B/P | A001-923 | W-I | 1410-00-9060 | 1.000 |
| 13 | PROG PC BOARD, M117 | M117-PROG BD | W-I | 1218-00-0400 | 1.000 |
| 14 | SCW,SBH,2-56X1/8 | 4000NP | F-S | 2810-17-2102 | 16.000 |
| 17 | FISH PAPER PER B/P | A001-961 | W-I | 1410-00-9310 | 1.000 |
| 18 | AMP BOARD 2, M117 | M117-AMP BD 2 | W-I | 1218-00-0421 | 1.000 |
| 19 | COVER PER B/P | A001-924 | W-I | 1410-00-9070 | 2.000 |
| 20 | COVER PR B/P | A001-926 | W-I | 1410-00-9090 | 1.000 |
| 21 | SCW,SBH,2-56X3/16 | 4001NP | F-S | 2810-17-2103 | 4.000 |
| C08 C09 C10 C11 C12 C13 C14 | CAP,FT,500V,2200PF | 4420-2200PF | AER | 1510-31-1222 | 7.000 |
| C15 | CAP,COMP,500V,1PF | QC-1PF | Q-C | 1510-40-0010 | 1.000 |
| R313 R315 | RES,C,1/4W,5%,2.7 | CF1/4-2.7 | ASE | 4700-15-2708 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CHASSIS,M117<br>FROM:1410-00-3360 | 1414-30-1009 | W-I | 1414-30-1009 | 1.000 |
| 2 | BASE,M117<br>FROM:3210-08-0033 | 1414-30-1008 | W-I | 1414-30-1008 | 1.000 |
| 3 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 4 | NUT,6-32X1/4HN101-600 | 8005NP | F-S | 2810-14-6100 | 2.000 |
| 5 | INT,LOWASHER,6<br>HW101-600 | 1304ZP | F-S | 2810-24-6000 | 2.000 |
| 6 | SCW,SBH,6-32X1/4 | 6-32X1/4,UC,BH,NP | S-S | 2810-17-6104 | 1.000 |
| 7 | SHIELD PER B/P | A001-920 | W-I | 1410-00-9080 | 2.000 |
| 9 | SHIELD PER B/P | A001-921 | W-I | 1410-00-9040 | 1.000 |
| 16 | STANDOFF, SWAGE,<br>3/16 X 1/8 | SS151-1A-17 | UNIC | 2810-05-0009 | 4.000 |
| 21 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 2.000 |
| 22 | CLOVERLEAF FTE-12<br>HT101-000 | 011-6808-000-59-9 | SEL | 2112-18-0001 | 2.000 |
| 23 | CAP,FT,500V,470PF | FASC-4712 | A-B | 1510-30-0471 | 7.000 |

| WAVETEK PARTS LIST | MODULE ASSY,M117 | 1216-40-0023<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C301 C302 C303 C304 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 4.000 |
| CR301 CR302 CR303 CR304 CR305 CR306 | DIODE,SWITCHING | BA482 | APX | 4812-02-0004 | 6.000 |
| R301 R302 R304 R305 | RES,C,1/8W,5%,1K RC101-210 | CF1/8-1K | ASE | 4700-05-1001 | 4.000 |
| R303 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 1.000 |
| R306 R307 | RES,L-A,1/4W,1%,143 | SPS-N-347-143 | IRC | 4741-14-3008 | 2.000 |
| R308 | RES,L-A,1/4W,1%,107 | SPS-N-347-107 | IRC | 4741-10-7008 | 1.000 |
| R309 R310 | RES,L-A,1/4W,1%,90.9 | SPS-N-347-90.9 | IRC | 4741-90-9007 | 2.000 |
| R311 | RES,L-A,1/4W,1%,374 | SPS-N-347-374 | IRC | 4741-37-4008 | 1.000 |
| R312 R314 | RES,C,1/8W,5%,2K | CF1/8-2K | ASE | 4700-05-2001 | 2.000 |

| WAVETEK PARTS LIST | ATTEN PC BOARD, M117 | 1218-00-0390 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C401 C402 C404 C405 C408 C409 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 6.000 |
| C403 C406 C407 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 3.000 |
| IC401 IC402 IC403 | OP AMP | N5741CV | SIG | 7000-57-4100 | 3.000 |
| R401 R407 R418 | RES,C,1/4W,5%,27K | CF1/4-27K | ASE | 4700-15-2702 | 3.000 |
| R402 R408 R417 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 3.000 |
| R403 R409 R416 | RES,C,1/4W,5%,30K | CF1/4-30K | ASE | 4700-15-3002 | 3.000 |
| R404 R406 R410 R412 R413 R415 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 6.000 |
| R405 R411 R414 R419 R420 R422 R423 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 7.000 |
| R421 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |

| WAVETEK PARTS LIST | PROG PC BOARD, M117 | 1218-00-0400 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C101 C102 C103 C104 C105 C106 C107 C108 C109 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 9.000 |
| C110 | CAP,DISC,1KV,10PF | 10TCC-Q10 | SPR | 1510-10-0100 | 1.000 |
| C111 | CAP,VAR,3.5-13PF | 7S-TRIKO-02-3.5-13PF | STR | 1510-70-0130 | 1.000 |
| L101 L102 L103 L104 | TORDID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 4.000 |
| Q101 Q102 Q103 Q104 | TRANS QB000-035 | BFR90 | APX | 4902-00-0900 | 4.000 |
| R101 R106 R107 R108 | RES,C,1/8W,5%,240 | BB-2415 | ***** | 4705-05-2400 | 4.000 |
| R102 R103 R104 R105 | RES,C,1/8W,5%, 20K | BB2035 | A-B | 4705-05-2002 | 4.000 |
| R109 R110 | RES,C,1/4W,5%,1.5K | CF1/4-1.5K | ASE | 4700-15-1501 | 2.000 |
| R111 R112 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R113 R114 R115 R116 R117 R118 R120 R121 | RES,C,1/8W,5%,39-OHM | BB3905 | A-B | 4705-05-3909 | 8.000 |
| R119 | RES,C,1/8W,5%,120 | BB1215 | A-B | 4705-05-1200 | 1.000 |
| R122 | RES,C,1/8W,5%,22 | BB2205 | A-B | 4705-05-2209 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C201 C202 C203 C204 C206 C207 C208 C209 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 8.000 |
| C205 | CAP,CHIP,1000PF,50V CC101-210 | 5BN050S102KS | VAR | 1510-00-1102 | 1.000 |
| C210 | CAP,DISC,1KV,10PF | 10TCC-Q10 | SPR | 1510-10-0100 | 1.000 |
| C211 | CAP,VAR,3.5-13PF | 7S-TRIKO-02-3.5-13PF | STR | 1510-70-0130 | 1.000 |
| L201 | TOROID,10T,1-1/2L | LA009-010-2 | W-I | 1810-05-0005 | 1.000 |
| L202 L203 L204 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 3.000 |
| Q201 Q202 Q203 Q204 | TRANS QB000-035 | BFR90 | APX | 4902-00-0900 | 4.000 |
| R201 R206 R207 R208 | RES,C,1/8W,5%,240 | BB-2415 | ***** | 4705-05-2400 | 4.000 |
| R202 R203 R204 R205 | RES,C,1/8W,5%, 20K | BB2035 | A-B | 4705-05-2002 | 4.000 |
| R209 R210 | RES,C,1/4W,5%,1.5K | CF1/4-1.5K | ASE | 4700-15-1501 | 2.000 |
| R211 R212 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R213 R214 R215 R216 R217 R218 R220 R221 | RES,C,1/8W,5%,39-OHM | BB3905 | A-B | 4705-05-3909 | 8.000 |
| R219 | RES,C,1/8W,5%,120 | BB1215 | A-B | 4705-05-1200 | 1.000 |
| R222 | RES,1/8W,5%,10-OHM | BB1005 | A-B | 4705-05-1009 | 1.000 |

| WAVETEK PARTS LIST | AMP BOARD 2, M117 | 1218-00-0421 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 3 | PC ASSEMBLY, M118 | M118-PC | W-I | 1218-00-0500 | 1.000 |

| WAVETEK PARTS LIST | DIFF BIAS DET,M118-1 | 1114-00-9003 PAGE: 1 | B REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | FRAME,M11B<br>FROM:1410-30-0700 | 1414-30-1012 | W-I | 1414-30-1012 | 1.000 |
| 2 | BASE,M11B<br>FROM:3210-08-0033 | 1414-30-1011 | W-I | 1414-30-1011 | 1.000 |
| 4 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 5 | SCW,SBH,6-32X3/16 | 6-32X3/16,BH,NP | S-S | 2810-17-6103 | 1.000 |
| 6 | INT,LOWASHER,6<br>HW101-600 | 1304ZP | F-S | 2810-24-6000 | 2.000 |
| 7 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 2.000 |
| 8 | SWITCH,SPDTST000-003 | MST-105D | ALC | 5106-00-0002 | 1.000 |
| 11 | CAP,FT,500V,470PF | FA5C-4712 | A-B | 1510-30-0471 | 3.000 |
| 12 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 3.000 |

| WAVETEK PARTS LIST | MODULE ASSY,M11B | 1216-40-0025<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 9 | IC SKT,16 PIN MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 1.000 |
| 10 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 4.000 |
| C01 | CAP,VAR,2.5-5PF | 5S-TRIKO-04-2.5/5 | STR | 1510-70-8509 | 1.000 |
| C02 C03 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 2.000 |
| C04 C05 C06 C07 C36 | CAP,DISC,1KV,68PF | 68U2J680J | MDC | 1510-10-3680 | 5.000 |
| C08 C09 C10 C13 C22 C23 C24 C25 C26 C27 C28 C29 C37 C38 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 14.000 |
| C11 C39 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 2.000 |
| C12 | CAP,FILM,250V,.047UF | 818347254 | REI | 1510-60-9473 | 1.000 |
| C14 C15 C16 C17 C18 C19 C20 C21 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 8.000 |
| CR01 CR02 CR03 CR04 | DIODE,SCHOTTKY | 5082-2835 | H-P | 4809-02-0002 | 4.000 |
| IC01 IC02 IC03 IC04 | DUAL OP AMP,RAY ONLY | RC4558NB-RAY | RAY | 7000-45-5801 | 4.000 |
| IC05 | QUAD ANALOG SWITCH STATIC SENSITIVE | HI-201-5 | HSD | 8000-02-0100 | 1.000 |
| L01 | RF CHOKE,REF ONLY | CHOKE | W-I | 1819-99-9999 | 1.000 |
| L02 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 1.000 |
| L03 | TOROID,10T,1-1/2L | LA009-010-2 | W-I | 1810-05-0005 | 1.000 |
| Q01 Q02 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 2.000 |
| Q03 | TRANS QA054-580 | 2N5458 | MOT | 4901-05-4580 | 1.000 |
| R01 R02 | RES,C,1/4W,5%,75 | CR1/4-75 | ASE | 4700-15-7509 | 2.000 |
| R03 R04 R05 R25 | RES,C,1/4W,5%,220 | CF1/4-220 | ASE | 4700-15-2200 | 4.000 |
| R06 R07 | RES,C,1/4W,5%,270K | CF1/4-270K | ASE | 4700-15-2703 | 2.000 |
| R08 R09 R17 R18 R22 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 5.000 |
| R10 | RES,C,1/8W,5%,6.8K | CF1/8-6.8K | ASE | 4700-05-6801 | 1.000 |
| R11 R12 | RES,C,1/4W,5%,470K | CF1/4-470K | ASE | 4700-15-4703 | 2.000 |
| R13 R14 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 2.000 |
| R15 R16 | RES,C,1/4W,5%,5.6K | CF1/4-5.6K | ASE | 4700-15-5601 | 2.000 |
| R19 R20 R21 R24 R28 | RES,C,1/8W,5%,10K | CF1/8-10K | ASE | 4700-05-1002 | 5.000 |
| R23 R39 | POT,10K,RP130-310 | 89PR10K | BEK | 4610-00-2103 | 2.000 |
| R26 R27 R30 R56 R57 R58 R59 R60 R61 R62 R63 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 11.000 |
| R29 | RES,C,1/8W,5%,56K | CF-1/8-56K | ASE | 4700-05-5602 | 1.000 |

| WAVETEK PARTS LIST | PC ASSEMBLY, M118 | 1218-00-0500 PAGE: 1 | F REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R31 | RES,C,1/8W,5%,10 | CF1/8-10 | ASE | 4700-05-1009 | 1.000 |
| R32 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R33 R48 R55 | RES,MF,1/8W,1%,3.01K | RN55D-3.01K | MILSP | 4701-03-3011 | 3.000 |
| R34 R36 R37 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 3.000 |
| R35 | RES,C,1/4W,5%,3K | CF1/4-3K | ASE | 4700-15-3001 | 1.000 |
| R38 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R40 | RES,C,1/4W,5%,1.2K | CF1/4-1.2K | ASE | 4700-15-1201 | 1.000 |
| R41 R42 R43 R46 R47 | RES,C,1/4W,5%,6.2K | CF1/4-6.2K | ASE | 4700-15-6201 | 5.000 |
| R44 R45 | RES,MF,1/8W,1%,7.5K | RN55D-7.5K | MILSP | 4701-03-7501 | 2.000 |
| R49 | RES,MF,1/8W,1%,4.32K | RN55D-4.32K | MILSP | 4701-03-4321 | 1.000 |
| R50 | RES,MF,1/8W,1%,1.58K | RN55D-1.58K | MILSP | 4701-03-1581 | 1.000 |
| R51 | RES,MF,1/8W,1%,2.15K | RN55D-2.15K | MILSP | 4701-03-2151 | 1.000 |
| R52 | RES,MF,1/8W,1%,1.43K | RN55D-1.43K | MILSP | 4701-03-1431 | 1.000 |
| R53 | RES,MF,1/8W,1%,1.82K | RN55D-1.82K | MILSP | 4701-03-1821 | 1.000 |
| R54 | RES,MF,1/8W,1%,768 | RN55D-768 | MILSP | 4701-03-7680 | 1.000 |
| R64 | RES,C,1/8W,5%,56 | CF1/8-56 | ASE | 4700-05-5609 | 1.000 |
| T01 | RF XFMR<br>FROM:1813-00-0008 | 1210-41-0006 | W-I | 1210-41-0006 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 3 | NUT,6-32X1/4HN101-600 | 8005NP | F-S | 2810-14-6100 | 1.000 |
| 4 | INT,LOWASHER,6 HW101-600 | 1304ZP | F-S | 2810-24-6000 | 1.000 |
| C01 C02 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 2.000 |

| WAVETEK PARTS LIST | DUMMY BASE, FOR M119 | 1118-00-0048 PAGE: 1 | C REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 21 | CRT FACEPLACE, 1865 | 1410-30-1700 | W-I | 1410-30-1700 | 1.000 |
| R75 | 250K POT | WA2G028S254UA | A-B | 4610-14-4254 | 1.000 |

| WAVETEK PARTS LIST | FRONT PANEL ASY,1865 | 1118-40-0043 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| MNONE | SUN SHIELD R SIDE | 1410-30-1650 | W-I | 1410-30-1650 | 1.000 |

| WAVETEK PARTS LIST | SUN SHEILD ASSY,1865 | 1216-00-0013 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 6 | REAR ACCESS PNL B/P | 1410-60-1290 | W-I | 1410-60-1290 | 1.000 |
| 12 | REAR ACCES. PANEL GASKET PER B/P | 1410-30-1600 | W-I | 1410-30-1600 | 1.000 |
| 19 | CUSHION REAR RECPT. | 1410-01-0590 | W-I | 1410-01-0590 | 1.000 |
| 20 | COV ASSY,1865 RECEPT | 1216-00-0003 | W-I | 1216-00-0003 | 1.000 |

| WAVETEK PARTS LIST | 65 REAR PANEL ASSY | 1216-40-0011 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 3 | BELT BAR RETNR. PER B/P | 1410-01-0510 | W-I | 1410-01-0510 | 4.000 |
| 4 | STRIP,STRAP RET,1865 | 1216-00-0008 | W-I | 1216-00-0008 | 4.000 |
| 7 | STRIP,FRONT NUT TOP/BOT PER B/P | 1410-01-0930 | W-I | 1410-01-0930 | 2.000 |
| 8 | FRONT SIDE NUT STRIP PER B/P | 1410-01-0500 | W-I | 1410-01-0500 | 2.000 |
| 9 | STRIP, BACK NUT TOP/BOT PER B/P | 1410-01-0940 | W-I | 1410-01-0940 | 2.000 |
| 10 | STRIP-BCK.SIDE NUT PER B/P | 1410-01-0530 | W-I | 1410-01-0530 | 2.000 |
| 11 | FRONT PANEL GASKET PER B/P | 1410-30-1610 | W-I | 1410-30-1610 | 1.000 |
| 15 | PLATE,VELCR MTG,1865 | 1216-00-0007 | W-I | 1216-00-0007 | 2.000 |
| 16 | WASHER,10,1/2 IN O.D | 1411-NP | F-S | 2810-26-0014 | 4.000 |
| 23 | SCREW,10-32X1/2,FH PHILLIPS,BLACK | 18286-BLK.OX. | F-S | 2810-23-0028 | 8.000 |
| 24 | NUT,HEX,#10-32,NP | 8011-NP | F-S | 2810-16-0015 | 8.000 |
| 25 | LOCKWASHER,10,SPRING | 1362-NP | F-S | 2810-28-0033 | 10.000 |
| 27 | VELWASHER PER B/P | 1410-01-0640 | W-I | 1410-01-0640 | 1.000 |
| 28 | WASHER,FLAT,4 | 1403ZP | F-S | 2810-26-4000 | 2.000 |
| 29 | HARN ASSY,CASE,1865 | 1216-00-0004 | W-I | 1216-00-0004 | 1.000 |
| 31 | STRAP ASSY,STRG,1865 | 1216-00-0006 | W-I | 1216-00-0006 | 1.000 |
| 35 | POP RIVET,1/8 DIA | 5X521 | DAYTN | 2810-30-0010 | 18.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | HOUSING CVR. PER B/P | 1410-80-0560 | W-I | 1410-80-0560 | 1.000 |
| 13 | CLAMP,BELT END | 1410-01-0960 | W-I | 1410-01-0960 | 5.000 |
| 14 | BACK UP PLT.PER B/P | 1410-01-0570 | W-I | 1410-01-0570 | 5.000 |
| 17 | HANDLE,HSNG COV,1865 | 1216-00-0005 | W-I | 1216-00-0005 | 1.000 |
| 18 | HINGE BELT PER B/P REF:3210-99-0032 | 1410-01-0610 | W-I | 1410-01-0610 | 2.000 |
| 22 | SCREW,10-32X5/8,PAN, PHILLIPS,NP STEEL | 19087-NP | F-S | 2810-23-0029 | 32.000 |
| 24 | NUT,HEX,#10-32,NP | 8011-NP | F-S | 2810-16-0015 | 6.000 |
| 25 | LOCKWASHER,10,SPRING | 1362-NP | F-S | 2810-28-0033 | 6.000 |
| 26 | COVER GASKET PER B/P | 1410-01-0480 | W-I | 1410-01-0480 | 1.000 |
| 28 | WASHER,FLAT,4 | 1403ZP | F-S | 2810-26-4000 | 2.000 |
| 30 | BUMPER CONTROL PNL. SW. PER B/P | 1410-01-0620 | W-I | 1410-01-0620 | 4.000 |
| 32 | BELT END STRIPPER B/P | 1410-01-0490 | W-I | 1410-01-0490 | 5.000 |
| 33 | VELCRO SHLD HOLDER REF3210-99-0030 | 1410-01-0650 | W-I | 1410-01-0650 | 1.000 |
| 35 | POP RIVET,1/8 DIA | 5X521 | DAYTN | 2810-30-0010 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | SOCKETMC000-002 | 016-2604-00-0-209 | SEL | 2112-00-0002 | 27.000 |
| 2 | GROUND LUG,#6,INT HG102-600 | 38-111 | F-S | 2112-03-0003 | 1.000 |
| 3 | MAIN UNIT CHAS B/P | 1410-80-0430 | W-I | 1410-80-0430 | 1.000 |

| WAVETEK PARTS LIST | CHASSIS ASSY,1865 | 1216-40-0030 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| S05 | SWITCH,TOGGLE ST003-006 | 7201P3WYZQ | C-K | 5106-00-0012 | 1.000 |

| WAVETEK PARTS LIST | CARD CG/MTHR BD ASSY | 1216-40-0032 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | TERM,MINI-PVMC000-092 | 47217 | BER | 2113-20-0001 | 10.000 |

| WAVETEK PARTS LIST | MODULE HARNESS, 1865 | 1219-00-0164 PAGE: 1 | B REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | TERM,MINI-PVMC000-092 | 47217 | BER | 2113-20-0001 | 14.000 |
| 2 | CONTACT MC000-068 | 08-50-0107 | MOL | 2113-07-0001 | 7.000 |

| WAVETEK PARTS LIST | ATTENUATOR/KEYBOARD HARNESS 1865 | 1219-00-0165 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | TERM,MINI-PVMC000-092 | 47217 | BER | 2113-20-0001 | 9.000 |

| | | | |
|---|---|---|---|
| WAVETEK PARTS LIST | OPTION HARNESS, 1865 | 1219-00-0166<br>PAGE: 1 | REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | ATTEN 7510-05 | 7510-05 | W-I | 1113-20-0046 | 1.000 |
| 2 | ATTEN 7550-04 | 1113-20-0047 | W-I | 1113-20-0047 | 1.000 |
| 3 | ATTENUATOR/KEYBOARD HARNESS 1865 | WY1865-ATT/KEYBD | W-I | 1219-00-0165 | 1.000 |

| | | | |
|---|---|---|---|
| WAVETEK PARTS LIST | ATTEN ASSY, 1865 | 1219-00-0168<br>PAGE: 1 | A<br>REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C47 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| Q07 | TRANS QB000-023 | MJE242 | MOT | 4902-00-2420 | 1.000 |
| Q13 | POWER,FET SCX VN46AF SCX, STATIC SENS. | VN46AF | SCX | 4902-00-0460 | 1.000 |
| R01 R31 | RES,C,1/4W,5%,330 | CF1/4-330 | ASE | 4700-15-3300 | 2.000 |
| R21 | RES,C,1/4W,5%,1M | CF1/4-1M | ASE | 4700-15-1004 | 1.000 |
| R41 | RES,C,1/2W,5%,27 | EB2705 | A-B | 4700-25-2709 | 1.000 |
| R74 | RES,C,1/4W,5%,330K | CF1/4-330K | ASE | 4700-15-3303 | 1.000 |

| | | | |
|---|---|---|---|
| WAVETEK PARTS LIST | CRT ASSEMBLY, 1865 | 1219-00-0172<br>PAGE: 1 | D<br>REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | MODIFIED CAN PER B/P FROM:3210-08-0003 | 1410-01-1420 | W-I | 1410-01-1420 | 1.000 |
| 2 | FISH PAPER PER B/P | 1410-01-1410 | W-I | 1410-01-1410 | 1.000 |
| 3 | PC BD, Z1006 FROM:3210-05-004 | Z1006 | W-I | 1710-00-3440 | 1.000 |
| 4 | STRAIN REL. BUSHING HB104-002 | SR-5P-4 BLK | HEY | 2810-37-0001 | 2.000 |
| 8 | COVER | HU6729CA-HT | HUD | 3210-08-0004 | 1.000 |
| 11 | DECAL,MODEL NO, BC-2 | MDB-26 | W-I | 2410-04-0419 | 1.000 |
| C01 | CAP,ELEC,25V,100UF | TE1211 | SPR | 1510-20-4101 | 1.000 |
| CR01 | DIODE,RECT,200V | 1N5624 | G-E | 4806-01-5624 | 1.000 |
| P01 | PLUG,ACCESSORY 6-12V | 20/2 SPT-1 W/#6 PLUG | AMELC | 2112-32-0002 | 1.000 |
| R01 | RES,WW,5W,5%,.1 | 45JR10 | OHM | 4702-65-1007 | 1.000 |

| WAVETEK PARTS LIST | BATT INTFC,BC2-1865 | 1019-00-0194 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 6 | TERM,FEMALE | 350388-1 | AMP | 2113-30-0001 | 2.000 |
| 10 | HEATER CORD,2 COND, 18 GA. | 19328 | BEL | 6014-51-8000 | 42.000 |
| J02 | CONN,FEM,PER B/P FROM:2113-29-0001 | 2113-29-0003 | W-I | 2113-29-0003 | 1.000 |

| WAVETEK PARTS LIST | BC-2 HEATER CORD SET | 1219-40-0089 PAGE: 1 | REV |
|---|---|---|---|

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| PLT CAR NOTCH, M113 | 1114-00-0154 | 103 |
| OPT B-7,BATT BACK UP | 1019-00-0072 | 104 |
| BATT BACK-UP,M152 | 1114-00-9001 | |
| PC ASSY, M152 | 1218-00-9002 | 105 |
| OPT DP-5, DUAL PILOT | 1019-00-0187 | |
| PSK MODULATOR, M135-5 | 1114-00-0354 | 106 |
| CABLE ASSY,3 ½ IN | 1217-70-0061 | |
| PC ASSY,M135-5 | 1218-00-0473 | 107-108 |
| SWITCH PC ASSY,M135-155 | 1218-00-1341 | 109 |
| OPT DP-155,DUAL PILOT | 1019-00-0189 | |
| PSK MODULATOR,M135-155 | 1114-00-0357 | |
| PC ASSY, M135-155 | 1218-00-0471 | 110-112 |
| CABLE ASSY,3 ½ IN | 1217-70-0061 | 113 |
| SWITCH PC ASSY,M135-155 | 1218-00-1341 | |
| OPT DP-5, DUAL PILOT | 1019-00-0190 | |
| PSK DEMODULATOR,M119-5 | 1114-00-0350 | 114 |
| MODULE ASSY,M119-DP | 1216-40-0024 | 115 |
| CABLE ASSY,3 ½ IN | 1217-70-0061 | |
| AMP BD,M119-5 | 1218-00-0433 | 116 |
| OSC BD,M119-5 | 1218-00-0443 | 117 |
| PHASE LK BD,M119-5 | 1218-00-0453 | 118-119 |
| OPT DP-155,DUAL PILOT | 1019-00-0192 | 120 |
| PDK DEMODULATOR,M119-155 | 1114-00-0353 | 121 |
| AMP ASSY,M119-155 | 1218-00-0431 | 122 |
| OSC ASSY,M119-155 | 1218-00-0441 | 123 |
| PHASE LOCK BD,M119 | 1218-00-0450 | 124-125 |
| SWITCH PC ASSY,M119-155 | 1218-00-1340 | 126 |
| KO22,CD RDR ,PD KIT | 1019-00-9001 | 127 |
| PC ASSY,CD RDR OPT | 1110-00-9001 | 128 |
| OPT/INTFC BD | 1110-00-9002 | 129 |
| CASE/CHAS INTFC BD | 1110-00-9003 | |

# OPTIONAL EQUIPMENT PARTS LIST


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| NUT PLATE ASSY | 1111-00-9001 | 129 |
| CS/CHAS INFC HARNESS | 1219-40-0085 | 130 |
| CHA/OPT BD,INFC HARN | 1219-40-0086 | |
| CARD READER ASSY | 1118-00-9001 | 131 |
| CHASSIS, CD RDR | 1216-00-9001 | 132 |
| MTG PLATE ASSY | 1216-00-9002 | 133 |
| CONN ASSY | 1216-00-9003 | 134 |
| PC ASSY,CD RDR | 1218-00-9001 | 135-136 |
| HARNESS,CRW-1 | 1219-00-9001 | 137 |
| OPT ME-1 | 1019-40-9012 | 138 |
| ME-1 PC ASSY | 1110-40-9010 | 139-140 |
| HARNESS,BATT BACKUP | 1219-40-9009 | 141 |
| AC PWR SUPPLY,BC | 1019-00-0177 | 142 |
| HARNESS,BC-3-A | 1219-00-0324 | 143 |
| HARNESS,BC-3-C | 1219-00-0326 | 144 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | IC SKT,PC,14 PIN MC000-073 | C931402 | T-I | 2112-00-0011 | 1.000 |
| C01 C03 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 2.000 |
| C02 | CAP,DISC,1KV,15PF | 10TCC-Q15 | SPR | 1510-10-0150 | 1.000 |
| C04 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 1.000 |
| CR01 CR02 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| IC01 | IC,IL004-001 | LM339N | NAT | 7000-03-3900 | 1.000 |
| Q01 Q02 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 2.000 |
| Q03 | TRANS QB000-009 | MPS3702 | NAT | 4902-03-7020 | 1.000 |
| R01 R02 R10 R11 | RES,C,1/4W,5%,47K | CF1/4-47K | ASE | 4700-15-4702 | 4.000 |
| R03 R12 | RES,C,1/4W,5%,22K | CF1/422K | ASE | 4700-15-2202 | 2.000 |
| R04 R13 | POT,20K,RP130-320 | 89PR20K | BEK | 4610-00-2203 | 2.000 |
| R05 | RES,MF,1/8W,1%,9.09K | RN55D-9.09K | MILSP | 4701-03-9091 | 1.000 |
| R06 | RES,MF,1/8W,1%,33.2 | RN55D-33.2 | MILSP | 4701-03-3329 | 1.000 |
| R07 | RES,MF,1/8W,1%,154 | RN55D-154 | MILSP | 4701-03-1540 | 1.000 |
| R08 | POT,2K,RP130-220 | 89PR2K | BEK | 4610-00-2202 | 1.000 |
| R09 | RES,MF,1/8W,1%,8.25K | RN55D-8.25K | MILSP | 4701-03-8251 | 1.000 |
| R14 R16 | RES,C,1/4W,5%,56K | CF1/4-56K | ASE | 4700-15-5602 | 2.000 |
| R15 R17 | RES,C,1/4W,5%,33K | CF1/4-33K | ASE | 4700-15-3302 | 2.000 |
| R18 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R19 | RES,C,1/4W,5%,150 | CF1/4-150 | ASE | 4700-15-1500 | 1.000 |
| R20 | RES,C,1/4W,5%,1.5M | CF1/4-1.5M | ASE | 4700-15-1504 | 1.000 |

| WAVETEK PARTS LIST | PLT CAR NOTCH,M113 | 1114-00-0154 PAGE: 1 | E REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| ZA1 | BATT BACK-UP, M152 | M152 | W-I | 1114-00-9001 | 1.000 |

| WAVETEK PARTS LIST | OPT B-7,BATT BACK-UP | 1019-00-0072 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C03 C04 C05 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 3.000 |
| ZA1 | PC ASSY, M152 | M152-PC | W-I | 1218-00-9002 | 1.000 |

| WAVETEK PARTS LIST | BATT BACK-UP, M152 | 1114-00-9001 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PC BOARD, Z1007 | Z1007 | W-I | 1710-00-3610 | 1.000 |
| 2 | CABLE TIE,4 | PLTIM-MP | PAND | 2810-00-0010 | 1.000 |
| BT1 | BATT,AA,NICD,1.2 V | K01A111AA-GTI | GE | 4010-00-0006 | 1.000 |
| C01 | CAP,ELEC,12V,100UF | ME4D100 | ARC | 1510-21-2101 | 1.000 |
| C02 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| CR01 CR03 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| CR02 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 1.000 |
| Q01 Q03 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 2.000 |
| Q02 Q04 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 2.000 |
| R01 R03 | RES,C,1/4W,5%,1.5K | CF1/4-1.5K | ASE | 4700-15-1501 | 2.000 |
| R02 | POT,1K | 91AR1K | BEK | 4610-00-7102 | 1.000 |
| R04 | RES,C,1/4W,5%,22 | CF1/4-22 | ASE | 4700-15-2209 | 1.000 |
| R05 | RES,C,1/4W,5% 1.3K | CF1/4-1.3K | ASE | 4700-15-1301 | 1.000 |
| R06 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 1.000 |
| R07 | RES,C,1/4W,5%M91 | CF1/4-91 | ASE | 4700-15-9109 | 1.000 |
| R08 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 1.000 |
| VR01 | IC,2.5VOLT REF | LM336Z | NAT | 7000-03-3600 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY, M152 | 1218-00-9002 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PSK MODULATORM135-5 | M135-5 | W-I | 1114-00-0354 | 1.000 |
| W06 | CABLE ASSY, 3 1/2 IN | WX1865-W4 | W-I | 1217-70-0061 | 1.000 |

| WAVETEK PARTS LIST | OPT DP-5, DUAL PILOT | 1019-00-0187 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | SWITCH PC ASSY M135-155 | M135-155-SW BD | W-I | 1218-00-1341 | 1.000 |
| 2 | PC ASSY, M135-5 | M135-5-PC | W-I | 1218-00-0473 | 1.000 |
| 10 | INT,LOWASHER,6 HW101-600 | 1304ZP | F-S | 2810-24-6000 | 1.000 |
| C01 C02 C06 C15 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 4.000 |
| C05 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 1.000 |
| CR09 CR10 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| J01 J02 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 2.000 |
| J03 J04 | PV JUMPER | 65474-002 | BER | 2112-10-0002 | 2.000 |
| L01 L02 | TOROID,10T | LA009-010 | W-I | 1810-05-0002 | 2.000 |
| MX01 | MIXER,DBL.BALANCED | CM-1 | VARIL | 3010-54-0001 | 1.000 |
| X1 | CRYSTAL, 5.00000MHZ | X32W-5.00000 | W-I | 2310-00-0911 | 1.000 |

| WAVETEK PARTS LIST | PSK MODULATOR M135-5 | 1114-00-0354 PAGE: 1 | C REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 2.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 3 1/2 IN | 1217-70-0061 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C03 C04 C17 C18 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 4.000 |
| C07 C08 | CAP,DISC,1KV,10PF | 10TCC-Q10 | SPR | 1510-10-0100 | 2.000 |
| C09 C10 C24 C25 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 4.000 |
| C11 C28 C29 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 3.000 |
| C12 | CAP,MICA,500V,160PF | DM15-161J | ARC | 1510-50-0161 | 1.000 |
| C13 C19 C20 C26 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 4.000 |
| C14 | CAP,DISC,1KV,1200PF | 5GA-D12 | SPR | 1510-10-1122 | 1.000 |
| C16 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| C21 | CAP,MICA,500V,330PF | DM15-331J | ARC | 1510-50-0331 | 1.000 |
| C22 | CAP,MICA,300V,47PF | ADM-5-470J | ARC | 1510-50-1470 | 1.000 |
| C23 | CAP,MICA,500V,470PF | DM15-471J | ARC | 1510-50-0471 | 1.000 |
| C27 | CAP,MICA,500V,100PF | DM15-101J | C-D | 1510-50-0101 | 1.000 |
| CR01 CR07 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| CR02 CR03 | DIODE,SCHOTTKY | 5082-2835 | H-P | 4809-02-0002 | 2.000 |
| CR04 CR05 CR06 | DIODE,PIN | MA47047 | M-A | 4805-02-0003 | 3.000 |
| CR08 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 1.000 |
| IC01 | OP AMP | M5741CV | SIG | 7000-57-4100 | 1.000 |
| J02 J03 | PV JUMPER | 65474-002 | BER | 2112-10-0002 | 2.000 |
| L03 L06 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L04 | CHOKE,COATED,4.7UH | 08N4R7 | JEF | 1810-03-0479 | 1.000 |
| L05 L09 | CHOKE,COATED,1UH | 08N1R0 | JEF | 1810-03-0010 | 2.000 |
| L07 L13 | CHOKE,COATED,2.2UH | 08N2R2 | JEF | 1810-03-0229 | 2.000 |
| L08 | CHOKE,COATED,1.2UH | 08N1R2 | JEF | 1810-03-0129 | 1.000 |
| L10 | CHOKE,COATED,2.7UH | 08N2R7 | JEF | 1810-03-0279 | 1.000 |
| L11 | CHOKE,COATED,.82UH | 08NR82 | JEF | 1810-03-0828 | 1.000 |
| L12 | CHOKE,MOLDED,510UH | 2500-14 | DEL | 1810-01-5100 | 1.000 |
| P02 P03 | HEADER,STRT,2 PIN<br>REF:2112-07-0000 | 65501-402 | BER | 2112-07-0007 | 2.000 |
| Q01 Q03 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 2.000 |
| Q02 Q04 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 2.000 |
| Q05 Q06 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 2.000 |
| R01 | RES,C,1/4W,5%,1.5K | CF1/4-1.5K | ASE | 4700-15-1501 | 1.000 |
| R02 R11 R34 R44 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 4.000 |

| WAVETEK PARTS LIST | PC ASSY, M135-5 | 1218-00-0473<br>PAGE: 1 | B<br>REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R03 R05 | RES,C,1/4W,5%,27K | CF1/4-27K | ASE | 4700-15-2702 | 2.000 |
| R04 | RES,C,1/4W,5%,3K | CF1/4-3K | ASE | 4700-15-3001 | 1.000 |
| R06 R17 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 2.000 |
| R07 | RES,C,1/4W,5%,430K | CF1/4-430K | ASE | 4700-15-4303 | 1.000 |
| R08 | RES,C,1/4W,5%,82 | CF1/4-82 | ASE | 4700-15-8209 | 1.000 |
| R09 R13 R37 R45 R46 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 5.000 |
| R10 R12 R14 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 3.000 |
| R15 R32 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 2.000 |
| R16 R28 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 2.000 |
| R18 R35 R48 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 3.000 |
| R19 R29 | POT,10K,RP130-310 | 89PR10K | BEK | 4610-00-2103 | 2.000 |
| R20 | RES,C,1/4W,5%,39K | CF1/4-39K | ASE | 4700-15-3902 | 1.000 |
| R21 R36 R51 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 3.000 |
| R22 | RES,C,1/8W,5%,33 | CF-1/8-33 | ASE | 4700-05-3309 | 1.000 |
| R23 R25 R41 R42 | RES,C,1/4W,5%,200 | CF1/4-200 | ASE | 4700-15-2000 | 4.000 |
| R24 | RES,C,1/4W,5%,62 | CF1/4-62 | ASE | 4700-15-6209 | 1.000 |
| R26 R27 | RES,C,1/8W,5%,150 | CF1/8-150 | ASE | 4700-05-1500 | 2.000 |
| R30 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 1.000 |
| R31 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| R33 R47 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 2.000 |
| R38 | RES,C,1/4W,5%,2.2K | CF1/4-2.2K | ASE | 4700-15-2201 | 1.000 |
| R39 R40 R52 | RES,C,1/4,5%,27 | CF1/4-27 | ASE | 4700-15-2709 | 3.000 |
| R43 | RES,C,1/4W,5%,330 | CF1/4-330 | ASE | 4700-15-3300 | 1.000 |
| R49 | RES,C,1/4W,5%,390 | CF1/4-390 | ASE | 4700-15-3900 | 1.000 |
| R50 | RES,C,1/4W,5%,68 | CF1/4-68 | ASE | 4700-15-6809 | 1.000 |
| R53 | RES,C,1/8W,5%,27 | BB 2705 | A-B | 4705-05-2709 | 1.000 |
| R57 R58 | RES,C,1/8W,5%,430 | BB4315 | A-B | 4705-05-4300 | 2.000 |
| T01 T02 | RF XFMR<br>FROM:1813-00-0008 | 1210-41-0007 | W-I | 1210-41-0007 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C401 C402 C403 C404 C405 C406 C407 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 7.000 |
| CR401 CR402 CR403 CR404 | DIODE DG000-014 | BA182 | APX | 4812-02-0003 | 4.000 |
| R401 R405 | RES,C,1/8W,5%,1K RC101-210 | CF1/8-1K | ASE | 4700-05-1001 | 2.000 |
| R402 R403 R404 | RES,C,1/8W,5%,2K | CF1/8-2K | ASE | 4700-05-2001 | 3.000 |

| WAVETEK PARTS LIST | SWITCH PC ASSY M135-155 | 1218-00-1341 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PSK MODULATORM135-155 | M135-155 | W-I | 1114-00-0357 | 1.000 |
| W06 | CABLE ASSY, 3 1/2 IN | WX1865-W4 | W-I | 1217-70-0061 | 1.000 |

| WAVETEK PARTS LIST | OPT DP-155, DUAL PILOT, 1855 | 1019-00-0189 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C01 C02 C06 C15 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 4.000 |
| C05 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 1.000 |
| CR09 CR10 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| J01 J03 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 2.000 |
| L01 L02 | TOROID,10T | LA009-010 | W-I | 1810-05-0002 | 2.000 |
| MX1 | MIXER,DBL.BALANCED | CM-1 | VARIL | 3010-54-0001 | 1.000 |
| X1 | CRYSTAL,51.66666 MHZ | X33W-51.66666 | W-I | 2310-00-0871 | 1.000 |

| WAVETEK PARTS LIST | PSK MODULATOR M135-155 | 1114-00-0357 PAGE: 1 | E REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C03 C04 C17 C18 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 4.000 |
| C07 C08 | CAP,DISC,1KV,10PF | 10TCC-Q10 | SPR | 1510-10-0100 | 2.000 |
| C09 | CAP,MICA,300V,150PF | DM15-151J | ARC | 1510-50-1151 | 1.000 |
| C10 C27 C28 C29 C30 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 5.000 |
| C11 | CAP,MICA,300V,20PF | ADM-5-200J | ARC | 1510-50-1200 | 1.000 |
| C12 | CAP,MICA,500V,120PF | DM15-121J | ARC | 1510-50-0121 | 1.000 |
| C13 | CAP,MICA,300V,15PF | DM-5CC150J | ARC | 1510-50-1150 | 1.000 |
| C14 | CAP,MICA,300V,27PF | DM15-270J | ARC | 1510-50-1270 | 1.000 |
| C16 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| C19 C20 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 2.000 |
| C21 | CAP,MICA,300V,8PF | DM-5CC080D | ARC | 1510-50-1809 | 1.000 |
| C22 | CAP,COMP,500V,.75PF | MC-.75PF | Q-C | 1510-40-1758 | 1.000 |
| C23 | CAP,MICA,300V,12PF | DM-5CC120J | ARC | 1510-50-1120 | 1.000 |
| C24 C25 | CAP,DISC,1KV,.01UF | 5GA-S10 | SPR | 1510-10-1103 | 2.000 |
| C26 | CAP,COMP,500V,.62PF | MC-.62PF | Q-C | 1510-40-1628 | 1.000 |
| C31 | CAP,COMP,500V,2PF | QC-2.0PF | Q-C | 1510-40-0020 | 1.000 |
| C32 | CAP,MICA,300V,24PF | ADM-5-240J | ARC | 1510-50-1240 | 1.000 |
| CR01 CR07 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| CR02 CR03 | DIODE,SCHOTTKY | 5082-2835 | H-P | 4809-02-0002 | 2.000 |
| CR04 CR05 CR06 | DIODE,PIN | MA47047 | M-A | 4805-02-0003 | 3.000 |
| CR08 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 1.000 |
| IC01 | OP AMP | N5741CV | SIG | 7000-57-4100 | 1.000 |
| J02 | PV JUMPER | 65474-002 | BER | 2112-10-0002 | 1.000 |
| L03 | COIL,15T,.2ID,AIR | 1815-00-0032 | W-I | 1815-00-0032 | 1.000 |
| L04 | CHOKE,COATED,2.2UH | 08N2R2 | JEF | 1810-03-0229 | 1.000 |
| L05 L06 | TOROID,10T | LA009-010 | W-I | 1810-05-0002 | 2.000 |
| L07 L10 | COIL,4-1/2T,#22 .200 ID,1/4 LEADS | 1815-00-0017 | W-I | 1815-00-0017 | 2.000 |
| L08 L11 | COIL,AIR,2T,0.200 ID | 2T,PER SPEC. | ATR | 1815-00-0001 | 2.000 |
| L09 | COIL,AIR,3T,.200 ID | 3T,PER SPEC. | ATR | 1815-00-0002 | 1.000 |
| L12 | RF XFMR FROM:1813-00-0007 | 1810-06-0001 | W-I | 1810-06-0001 | 1.000 |
| L13 | COIL,AIR,4T,.200 ID | 4T,PER SPEC. | ATR | 1815-00-0003 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY, M135-155 | 1218-00-0471 PAGE: 1 | D REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| P02 | HEADER,STRT,2 PIN<br>REF:2112-07-0000 | 65501-402 | BER | 2112-07-0007 | 1.000 |
| Q01 Q03 | TRANS QA039-040 | 2N3904 | NAT | 4901-03-9040 | 2.000 |
| Q02 Q04 | TRANS QA039-050 | 2N3905 | NAT | 4901-03-9050 | 2.000 |
| Q05 | TRANSISTOR,NPN,<br>MOT ONLY | 2N5179-MOT | MOT | 4901-05-1791 | 1.000 |
| Q06 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| Q07 | TRANS QA038-541<br>2N3854A | 2N3854A | G-E | 4901-03-8541 | 1.000 |
| R01 | RES,C,1/8W,5%,1.5K | CF 1/8-1.5K | ASE | 4700-05-1501 | 1.000 |
| R02 R18 R55 R56 | RES,C,1/8W,5%,1K<br>RC101-210 | CF1/8-1K | ASE | 4700-05-1001 | 4.000 |
| R03 R05 R54 | RES,C,1/8W,5%,27K | CF 1/8-27K | ASE | 4700-05-2702 | 3.000 |
| R04 | RES,C,1/4W,5%,3K | CF1/4-3K | ASE | 4700-15-3001 | 1.000 |
| R06 | RES,C,1/4W,5%,15K | CF1/4-15K | ASE | 4700-15-1502 | 1.000 |
| R07 | RES,C,1/4W,5%,430K | CF1/4-430K | ASE | 4700-15-4303 | 1.000 |
| R08 | RES,C,1/4W,5%,82 | CF1/4-82 | ASE | 4700-15-8209 | 1.000 |
| R09 R13 R40 R46 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 4.000 |
| R10 R12 R14 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 3.000 |
| R11 R34 R44 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 3.000 |
| R15 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R16 R31 | RES,C,1/8W,5%,10K | CF1/8-10K | ASE | 4700-05-1002 | 2.000 |
| R17 | RES,C,1/8W,5%,15K | CF 1/8-15K | ASE | 4700-05-1502 | 1.000 |
| R19 R29 | POT,10K,RP130-310 | 89PR10K | BEK | 4610-00-2103 | 2.000 |
| R20 | RES,C,1/8W,5%,39K | CF 1/8-39K | ASE | 4700-05-3902 | 1.000 |
| R23 R25 | RES,C,1/8W,5%,240 | CF1/8-240 | ASE | 4700-05-2400 | 2.000 |
| R24 | RES,C,1/8W,5%,51 | CF1/8-51 | ASE | 4700-05-5109 | 1.000 |
| R26 R27 | RES,C,1/8W,5%,150 | CF1/8-150 | ASE | 4700-05-1500 | 2.000 |
| R28 | RES,C,1/8W,5%,27 | BB 2705 | A-B | 4705-05-2709 | 1.000 |
| R30 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 1.000 |
| R32 | RES,C,1/8W,5%,100<br>RC101-110 | CF1/8-100 | ASE | 4700-05-1000 | 1.000 |
| R33 | RES,C,1/8W,5%,100K | CF1/8-100K | ASE | 4700-05-1003 | 1.000 |
| R35 | RES,C,1/8W,5%,6.8K | CF1/8-6.8K | ASE | 4700-05-6801 | 1.000 |
| R36 | RES.C.1/8W 5% 470 | CF1/8-470 | ASE | 4700-05-4700 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R37 R39 R45 | RES,C,1/8W,5%,10 | CF1/8-10 | ASE | 4700-05-1009 | 3.000 |
| R38 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 1.000 |
| R41 | RES,C,1/8W,5%,220 | CF1/8-220 | ASE | 4700-05-2200 | 1.000 |
| R42 | RES,C,1/4W,5%,220 | CF1/4-220 | ASE | 4700-15-2200 | 1.000 |
| R43 | RES,C,1/4W,5%,330 | CF1/4-330 | ASE | 4700-15-3300 | 1.000 |
| R47 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R48 | RES,C,1/4W,5%,6.8K | CF1/4-6.8K | ASE | 4700-15-6801 | 1.000 |
| R49 | RES,C,1/8W,5%,390 | CF1/8-390 | ASE | 4700-05-3900 | 1.000 |
| R50 | RES,C,1/8W,5%,68 | CF1/8-68 | ASE | 4700-05-6809 | 1.000 |
| R51 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 1.000 |
| R52 | RES,C,1/4,5%,27 | CF1/4-27 | ASE | 4700-15-2709 | 1.000 |
| R53 | RES,C,1/8W,5%,56 | CF1/8-56 | ASE | 4700-05-5609 | 1.000 |
| R57 R58 | RES,C,1/8W,5%,430 | BB4315 | A-B | 4705-05-4300 | 2.000 |
| T01 T02 | RF XFMR<br>FROM:1813-00-0008 | 1210-41-0007 | W-I | 1210-41-0007 | 2.000 |
| T03 | RF XFMR<br>FROM:1813-00-0001 | 1210-42-0029 | W-I | 1210-42-0029 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 2.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 3 1/2 IN | 1217-70-0061<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C401 C402 C403 C404 C405 C406 C407 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 7.000 |
| CR401 CR402 CR403 CR404 | DIODE DG000-014 | BA182 | APX | 4812-02-0003 | 4.000 |
| R401 R405 | RES,C,1/8W,5%,1K RC101-210 | CF1/8-1K | ASE | 4700-05-1001 | 2.000 |
| R402 R403 R404 | RES,C,1/8W,5%,2K | CF1/8-2K | ASE | 4700-05-2001 | 3.000 |

| WAVETEK PARTS LIST | SWITCH PC ASSY M135-155 | 1218-00-1341<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PSK DEMODULATOR, M119-5 | M119-5 | W-I | 1114-00-0350 | 1.000 |
| W06 | CABLE ASSY, 3 1/2 IN | WX1865-W4 | W-I | 1217-70-0061 | 1.000 |

| WAVETEK PARTS LIST | OPT DP-5, DUAL PILOT | 1019-00-0190<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 16 | SCW,SBH,2-56X3/16 | 4001NP | F-S | 2810-17-2103 | 15.000 |
| 17 | LOWASHER,INT 2 | 1330NP | F-S | 2810-24-2000 | 15.000 |
| 20 | IC SKT,PC,14 PIN MC000-073 | C731402 | T-I | 2112-00-0011 | 1.000 |
| 23 | FISHPAPER;PHASE LOCK PER B/P | A001-963 | W-I | 1410-00-9440 | 1.000 |
| 24 | FISHPAPER; BANDPASS PER B/P | A001-964 | W-I | 1410-00-9450 | 1.000 |
| 25 | OSC FISH PAPER B/P | A001-965 | W-I | 1410-00-9460 | 1.000 |
| C01 C02 C03 | CAP,FT,500V,2200PF | 4420-2200PF | AER | 1510-31-1222 | 3.000 |
| C04 C05 | CAP,FT,500V,4.7PF | 4420-4.7PF | AER | 1510-31-4479 | 2.000 |
| C13 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| CR01 CR02 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| IC01 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| L01 | TOROID,10T,1-1/2L | LA009-010-2 | W-I | 1810-05-0005 | 1.000 |
| L02 L03 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L04 | CHOKE,COATED,47UH | 08N470 | JEF | 1810-03-0470 | 1.000 |
| MX01 | MIXER,DBL.BALANCED | CM-1 | VARIL | 3010-54-0001 | 1.000 |
| R01 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 1.000 |
| R02 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 1.000 |
| R03 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| ZA01 | AMP BD, M119-5 | M119-5-AMP BD | W-I | 1218-00-0433 | 1.000 |
| ZA02 | OSC BD, M119-5 | M119-5-OSC BD | W-I | 1218-00-0443 | 1.000 |
| ZA03 | PHASE LK BD, M119-5 | M119-5-PH LK BD | W-I | 1218-00-0453 | 1.000 |
| ZA04 | SWITCH PC ASSY M119-155 | M119-155-SW BD | W-I | 1218-00-1340 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | FRAME,M119-DP<br>FROM:1410-30-0700 | 1414-30-1019 | W-I | 1414-30-1019 | 1.000 |
| 2 | INT,LOWASHER,6<br>HW101-600 | 1304ZP | F-S | 2810-24-6000 | 1.000 |
| 3 | CONN JF000-004 | 27-21 | APL | 2110-03-0001 | 2.000 |
| 4 | BASE,M119<br>FROM:3210-08-0033 | 1414-30-1018 | W-I | 1414-30-1018 | 1.000 |
| 5 | INDEX STUD | A001-009 | W-I | 1410-00-2680 | 1.000 |
| 8 | SCW,SBH,6-32X3/16 | 6-32X3/16,BH,NP | S-S | 2810-17-6103 | 1.000 |
| 9 | PSK DEMOD CHASSIS<br>CTR PLATE B/P | 1410-30-1690 | W-I | 1410-30-1690 | 1.000 |
| 12 | SHIELD PER B/P | A001-912 | W-I | 1410-00-2430 | 1.000 |
| 13 | SHIELD PER B/P | A001-913 | W-I | 1410-00-2440 | 1.000 |
| 14 | SHIELD PER B/P | A01-915 | W-I | 1410-00-2480 | 1.000 |
| 18 | STANDOFF, SWAGE,<br>3/16 X 1/8 | SS151-1A-17 | UNIC | 2810-05-0009 | 15.000 |
| 26 | CAP,FT,500V,6.8PF | 54-794-010-6892 | SPEC | 1510-30-1689 | 4.000 |
| 27 | CAP,FT,500V,1000PF | 54-794-010-102P | SPEC | 1510-30-8102 | 3.000 |

| WAVETEK PARTS LIST | MODULE ASSY,M119-DP | 1216-40-0024<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CONN JF000-008 | 27-25 | APL | 2110-03-1004 | 2.000 |

| WAVETEK PARTS LIST | CABLE ASSY, 3 1/2 IN | 1217-70-0061<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | TERM,MALE MC000-057 | 86093-7 | AMP | 2113-12-0001 | 1.000 |
| C101 C103 C110 C113 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 4.000 |
| C102 C111 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 2.000 |
| C104 C112 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C105 | CAP,MICA,100V,200 PF | DM5FA221J | ARC | 1510-50-7221 | 1.000 |
| C106 C108 | CAP,COMP,500V,10PF | QC-10PF | Q-C | 1510-40-0100 | 2.000 |
| C107 | CAP,MICA,100V,160 PF | DM5FA161J | ARC | 1510-50-7161 | 1.000 |
| C109 | CAP,MICA,100V,130PF | ADM-5CA131J | ARC | 1510-50-3131 | 1.000 |
| C114 C115 C116 | CAP,VARI,7.35PF,250V CV101-035 | 7STRIKO-02 | STR | 1510-70-0350 | 3.000 |
| L101 L107 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L102 | CHOKE,COATED,2.7UH | 08N2R7 | JEF | 1810-03-0279 | 1.000 |
| L103 | CHOKE,COATED,1.8UH | 08N1R8 | JEF | 1810-03-0189 | 1.000 |
| L104 | CHOKE,COATED,5.6UH | 08N5R6 | JEF | 1810-03-0569 | 1.000 |
| L105 | CHOKE,COATED,6.8UH | 08N6R8 | JEF | 1810-03-0689 | 1.000 |
| L106 | CHOKE,COATED,.47UH | 08NR47 | JEF | 1810-03-0478 | 1.000 |
| Q101 Q102 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 2.000 |
| R101 | RES,C,1/8W,5%,6.8K | CF1/8-6.8K | ASE | 4700-05-6801 | 1.000 |
| R102 R106 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 2.000 |
| R103 R107 | RES,C,1/8W,5%,10 | CF1/8-10 | ASE | 4700-05-1009 | 2.000 |
| R104 R108 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R105 | RES,C,1/8W,5%,4.7K | CF1/8-4.7K | ASE | 4700-05-4701 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C201 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| C202 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C203 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C205 | CAP,MICA,300V,30PF | DM-5ED300J | ARC | 1510-50-1300 | 1.000 |
| C206 | CAP,MICA,300V,15PF | DM-5CC150J | ARC | 1510-50-1150 | 1.000 |
| C210 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 1.000 |
| CR201 | DIODE,VARACTOR | BB205B | APX | 4803-02-0004 | 1.000 |
| L201 L202 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L204 | CHOKE,COATED,10UH | 08W100 | JEF | 1810-03-0100 | 1.000 |
| Q201 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| R201 | RES,C,1/8W,5%,9.1K | CF1/8-9.1K | ASE | 4700-05-9101 | 1.000 |
| R202 | RES,C, 1/8W,5%, 5.1K | CF 1/8 -5.1 K | ASE | 4700-05-5101 | 1.000 |
| R203 | RES.1/8W,5,330 | CF1/8-330 | ASE | 4700-05-3300 | 1.000 |
| R205 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 1.000 |
| R206 | RES,C,1/8W,5%,220 | CF1/8-220 | ASE | 4700-05-2200 | 1.000 |
| R207 R208 | RES,C,1/8W,5%,13 | CF-1/8-13 | ASE | 4700-05-1309 | 2.000 |
| R209 | RES,C,1/8W,5%,1.8K | CF1/8-1.8K | ASE | 4700-05-1801 | 1.000 |
| R209 | RES,C,1/4W,5%,1.8K | CF1/4-1.8K | ASE | 4700-15-1801 | 1.000 |
| T201 | RF XFMR PER B/P FROM:1813-00-0007 | 1210-40-0024 | W-I | 1210-40-0024 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION >< | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 19 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 2.000 |
| 20 | IC SKT,PC,14 PIN MC000-073 | C931402 | T-I | 2112-00-0011 | 2.000 |
| C301 C302 | CAP,MICA,100V,250PF | ADM-10CA251J | ARC | 1510-50-5251 | 2.000 |
| C303 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C304 C305 C307 C312 C313 C315 C316 C318 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 8.000 |
| C306 C308 C309 C310 C317 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 5.000 |
| C311 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C314 | CAP,DISC,1KV,270PF | 60U271M | MDC | 1510-10-1271 | 1.000 |
| C319 C320 C322 | CAP,MICA,100V,1000PF | ADM-15CA102J | ARC | 1510-50-6102 | 3.000 |
| C321 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| CR301 CR302 CR303 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 3.000 |
| IC301 | IF AMP | MC1350P | MOT | 7000-13-5000 | 1.000 |
| IC303 | OP AMP,DUAL,3MHZ | NE5530 | SIG | 7000-55-3000 | 1.000 |
| IC304 | PHASE DETECTOR | MC4044P | MOT | 8000-40-4400 | 1.000 |
| IC304 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| L301 L303 | CHOKE,COATED,6.8UH | 08N6R8 | JEF | 1810-03-0689 | 2.000 |
| L304 L305 | TORDID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| Q301 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| Q302 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 1.000 |
| R301 | RES,C,1/4W,5%,2.7K | CF1/4-2.7K | ASE | 4700-15-2701 | 1.000 |
| R302 R309 R323 R324 R329 R331 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 6.000 |
| R303 R315 R332 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 3.000 |
| R304 R311 R319 R325 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 4.000 |
| R305 | RES,C,1/4W,5%,5.6K | CF1/4-5.6K | ASE | 4700-15-5601 | 1.000 |
| R306 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R307 | RES,C,1/4W,5%,200 | CF1/4-200 | ASE | 4700-15-2000 | 1.000 |
| R308 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 1.000 |
| R310 | RES,C,1/4W,5%,180 | CF1/4-180 | ASE | 4700-15-1800 | 1.000 |
| R312 R314 | RES,MF,1/8W,1%,1K | RN55D-1K | MILSP | 4701-03-1001 | 2.000 |
| R313 | RES,C,1/4W,5%,2.7 | CF1/4-2.7 | ASE | 4700-15-2708 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R316 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 1.000 |
| R317 | POT,2K,RP144-220<br>FROM:4610-00-7202 | 4610-00-4202 | W-I | 4610-00-4202 | 1.000 |
| R318 | RES,C,1/4W,5%,27K | CF1/4-27K | ASE | 4700-15-2702 | 1.000 |
| R321 | RES,MF,1/8W,1%,4.99K | RN55D-4.99K | MILSP | 4701-03-4991 | 1.000 |
| R322 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R326 | RES,MF,1/8W,1%,11.3K | RN55D-11.3K | MILSP | 4701-03-1132 | 1.000 |
| R327 | RES,MF,1/8W,1%,1.50K | RN55D-1.50K | MILSP | 4701-03-1501 | 1.000 |
| R328 R330 | RES,C,1/8W,5%,100K | CF1/8-100K | ASE | 4700-05-1003 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PSK DEMODULATOR, M119-155 | M119-155 | W-I | 1114-00-0353 | 1.000 |
| W06 | CABLE ASSY, 3 1/2 IN | WX1865-W4 | W-I | 1217-70-0061 | 1.000 |

| WAVETEK PARTS LIST | OPT DP-155, DUAL PILOT, 1865 | 1019-00-0192 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 10 | COVER PER B/P | A001-910 | W-I | 1410-00-2380 | 1.000 |
| 11 | COVER PER B/P | A001-911 | W-I | 1410-00-2390 | 1.000 |
| 16 | SCW,SBH,2-56X3/16 | 4001NP | F-S | 2810-17-2103 | 15.000 |
| 17 | LOWASHER,INT 2 | 1330NP | F-S | 2810-24-2000 | 15.000 |
| 20 | IC SKT,PC,14 PIN MC000-073 | C931402 | T-I | 2112-00-0011 | 1.000 |
| 23 | FISHPAPER;PHASE LOCK PER B/P | A001-963 | W-I | 1410-00-9440 | 1.000 |
| 24 | FISHPAPER; BANDPASS PER B/P | A001-964 | W-I | 1410-00-9450 | 1.000 |
| 25 | OSC FISH PAPER B/P | A001-965 | W-I | 1410-00-9460 | 1.000 |
| C01 C02 C03 | CAP,FT,500V,2200PF | 4420-2200PF | AER | 1510-31-1222 | 3.000 |
| C04 C05 | CAP,FT,500V,4.7PF | 4420-4.7PF | AER | 1510-31-4479 | 2.000 |
| C13 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| CR01 CR02 | DIODE,RECT,400V | 1N4004 | P-C | 4806-01-4004 | 2.000 |
| IC01 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| L01 | TORDID,10T,1-1/2L | LA009-010-2 | W-I | 1810-05-0005 | 1.000 |
| L02 L03 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L04 | CHOKE,COATED,47UH | 08N470 | JEF | 1810-03-0470 | 1.000 |
| MX01 | MIXER,DBL.BALANCED | CM-1 | VARIL | 3010-54-0001 | 1.000 |
| R01 | RES,C,1/4W,5%,9.1K | CF1/4-9.1K | ASE | 4700-15-9101 | 1.000 |
| R02 | RES,C,1/4W,5%,5.1K | CF1/4-5.1K | ASE | 4700-15-5101 | 1.000 |
| R03 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| ZA01 | AMP ASSY, M119-155 | M119-155-AMP BD | W-I | 1218-00-0431 | 1.000 |
| ZA02 | OSC ASSY, M119-155s | M119-155-OSC BD | W-I | 1218-00-0441 | 1.000 |
| ZA03 | PHASE LOCK BD, M119 | M119-PH LK BD | W-I | 1218-00-0450 | 1.000 |
| ZA04 | SWITCH PC ASSY M119-155 | M119-155-SW BD | W-I | 1218-00-1340 | 1.000 |

| WAVETEK PARTS LIST | PSK DEMODULATOR, M119-155 | 1114-00-0353 PAGE: 1 | C REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C101 C110 C113 | CAP,DISC,1KV,470PF | 60U471M | MDC | 1510-10-1471 | 3.000 |
| C103 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C104 C112 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 2.000 |
| C105 C107 | CAP,MICA,300V,6PF | DM-5CC060D | ARC | 1510-50-1609 | 2.000 |
| C106 C108 | CAP,COMP,500V,.36PF | MC 36PF | Q-C | 1510-40-1368 | 2.000 |
| C109 | CAP,MICA,300V,5PF | DM-5CC050D | ARC | 1510-50-1509 | 1.000 |
| C111 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| L101 L107 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L102 | COIL,AIR,4T,.200 ID | 4T,PER SPEC. | ATR | 1815-00-0003 | 1.000 |
| L103 | COIL,AIR,3T,.200 ID | 3T,PER SPEC. | ATR | 1815-00-0002 | 1.000 |
| L104 | COL,AIR,6T,.200 ID | 6T,PER SPEC. | ATR | 1815-00-0004 | 1.000 |
| L105 | COIL,7T,.2ID,PER B/P | 1815-00-0029 | W-I | 1815-00-0029 | 1.000 |
| L106 | COIL,AIR,2T,0.200 ID | 2T,PER SPEC. | ATR | 1815-00-0001 | 1.000 |
| Q101 Q102 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 2.000 |
| R102 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 1.000 |
| R103 R107 | RES,C,1/8W,5%,10 | CF1/8-10 | ASE | 4700-05-1009 | 2.000 |
| R104 R108 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 2.000 |
| R105 | RES,C,1/8W,5%,6.8K | CF1/8-6.8K | ASE | 4700-05-6801 | 1.000 |
| R106 | RES,C,1/8W,5%,15K | CF 1/8-15K | ASE | 4700-05-1502 | 1.000 |

| WAVETEK PARTS LIST | AMP ASSY, M119-155 | 1218-00-0431 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C201 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 1.000 |
| C202 C203 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 2.000 |
| C204 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 1.000 |
| C205 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 1.000 |
| C206 C209 | CAP,MICA,300V,4PF | DM5-040D | ARC | 1510-50-1409 | 2.000 |
| C207 | CAP,MICA,300V,12PF | DM-5CC120J | ARC | 1510-50-1120 | 1.000 |
| C208 | CAP,MICA,300V,3PF | DM5-030D | ARC | 1510-50-1309 | 1.000 |
| C210 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 1.000 |
| CR201 | DIODE,VARACTOR | BB205B | APX | 4803-02-0004 | 1.000 |
| L201 L202 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| L203 | COIL,4-1/2T,#22 .200 ID,1/4 LEADS | 1815-00-0017 | W-I | 1815-00-0017 | 1.000 |
| L204 | COIL,AIR,2T,0.200 ID | 2T,PER SPEC. | ATR | 1815-00-0001 | 1.000 |
| Q201 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| R201 | RES,C,1/8W,5%,9.1K | CF1/8-9.1K | ASE | 4700-05-9101 | 1.000 |
| R202 | RES,C, 1/8W,5%, 5.1K | CF 1/8 -5.1 K | ASE | 4700-05-5101 | 1.000 |
| R203 | RES.1/8W,5,330 | CF1/8-330 | ASE | 4700-05-3300 | 1.000 |
| R204 | RES,C,1/8W,5%,47 | CF1/8-47 | ASE | 4700-05-4709 | 1.000 |
| R205 | RES,C,1/8W,5%,20K | CF1/8-20K | ASE | 4700-05-2002 | 1.000 |
| R206 R208 | RES.C.1/8W 5% 470 | CF1/8-470 | ASE | 4700-05-4700 | 2.000 |
| R207 | RES,C,1/8W,5%,27 | CF1/8-27 | ASE | 4700-05-2709 | 1.000 |
| R209 | RES,C,1/8W,5%,1.8K | CF1/8-1.8K | ASE | 4700-05-1801 | 1.000 |

| WAVETEK PARTS LIST | OSC ASSY, M119-155 5 | 1218-00-0441 PAGE: 1 | B REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C301 C302 | CAP,MICA,100V,250PF | ADM-10CA251J | ARC | 1510-50-5251 | 2.000 |
| C303 | CAP,DISC,1KV,.001UF | 5GAD10 | SPR | 1510-10-1102 | 1.000 |
| C304 C305 C307 C312 C313 C315 C316 C318 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 8.000 |
| C306 C308 C309 C310 C317 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 5.000 |
| C311 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C314 | CAP,DISC,1KV,270PF | 60U271M | MDC | 1510-10-1271 | 1.000 |
| C319 C320 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 2.000 |
| C321 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 1.000 |
| CR301 CR302 CR303 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 3.000 |
| IC301 | IF AMP | MC1350P | MOT | 7000-13-5000 | 1.000 |
| IC302 | PHASE DETECTOR | MC4044P | MOT | 8000-40-4400 | 1.000 |
| IC303 | OP AMP,DUAL,3MHZ | NE5530 | SIG | 7000-55-3000 | 1.000 |
| IC304 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| L301 L303 | CHOKE,COATED,6.8UH | 08N6R8 | JEF | 1810-03-0689 | 2.000 |
| L302 | CHOKE,COATED,3.9UH | 08N3R9 | JEF | 1810-03-0399 | 1.000 |
| L304 L305 | TOROID,10T,1-1/4L | LA009-010-1 | W-I | 1810-05-0004 | 2.000 |
| Q301 | TRANS QA050-530 | 2N5053 | APX | 4901-05-0530 | 1.000 |
| Q302 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 1.000 |
| R301 | RES,C,1/4W,5%,2.7K | CF1/4-2.7K | ASE | 4700-15-2701 | 1.000 |
| R301 | RES,C,1/4W,5%,7.5K | CF1/4-7.5K | ASE | 4700-15-7501 | 1.000 |
| R302 R309 R323 R324 R329 R331 | RES,C,1/4W,5%,20K | CF1/4-20K | ASE | 4700-15-2002 | 6.000 |
| R303 R315 R332 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 3.000 |
| R304 R311 R319 R325 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 4.000 |
| R305 | RES,C,1/4W,5%,5.6K | CF1/4-5.6K | ASE | 4700-15-5601 | 1.000 |
| R306 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R307 | RES,C,1/4W,5%,200 | CF1/4-200 | ASE | 4700-15-2000 | 1.000 |
| R308 | RES,C,1/4W,5%,470 | CF1/4-470 | ASE | 4700-15-4700 | 1.000 |
| R310 | RES,C,1/4W,5%,180 | CF1/4-180 | ASE | 4700-15-1800 | 1.000 |
| R312 R314 | RES,MF,1/8W,1%,1K | RN55D-1K | MILSP | 4701-03-1001 | 2.000 |
| R313 | RES,C,1/4W,5%,2.7 | CF1/4-2.7 | ASE | 4700-15-2708 | 1.000 |
| R316 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R317 | POT,2K,RP144-220<br>FROM:4610-00-7202 | 4610-00-4202 | W-I | 4610-00-4202 | 1.000 |
| R318 | RES,C,1/4W,5%,27K | CF1/4-27K | ASE | 4700-15-2702 | 1.000 |
| R321 | RES,MF,1/8W,1%,4.99K | RN55D-4.99K | MILSP | 4701-03-4991 | 1.000 |
| R322 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R326 | RES,MF,1/8W,1%,11.3K | RN55D-11.3K | MILSP | 4701-03-1132 | 1.000 |
| R327 | RES,MF,1/8W,1%,1.50K | RN55D-1.50K | MILSP | 4701-03-1501 | 1.000 |
| R328 R330 | RES,C,1/8W,5%,100K | CF1/8-100K | ASE | 4700-05-1003 | 2.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| C401 C402 C403 C404 C405 C406 | CAP.,CHIP,.1 MF | 51C1209-B104Z | CFI | 1510-00-3104 | 6.000 |
| CR401 CR402 CR403 CR404 | DIODE DG000-014 | BA182 | APX | 4812-02-0003 | 4.000 |
| R401 R405 | RES,C,1/8W,5%,1K RC101-210 | CF1/8-1K | ASE | 4700-05-1001 | 2.000 |
| R402 R403 R404 | RES,C,1/8W,5%,2K | CF1/8-2K | ASE | 4700-05-2001 | 3.000 |

| | | | |
|---|---|---|---|
| WAVETEK PARTS LIST | SWITCH PC ASSY M119-155 | 1218-00-1340 PAGE: 1 | B REV |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | CASE/CHAS INTFC BD | 1865-3-CASE/CHAS BD | W-I | 1110-00-9003 | 1.000 |
| 3 | OPT/INTFC BD | 1855-INTFC BD | W-I | 1110-00-9002 | 1.000 |
| 4 | PC ASSY, CD RDR OPT | CRW-1-PC | W-I | 1110-00-9001 | 1.000 |
| 6 | PLATE,MTG,PER B/P | 1414-00-0002 | W-I | 1414-00-0002 | 1.000 |
| 7 | GASKET,MTG PLATE, PER B/P | 1414-00-0003 | W-I | 1414-00-0003 | 1.000 |
| 8 | NUT PLATE ASSY | 1111-00-9001 | W-I | 1111-00-9001 | 2.000 |
| 9 | DECAL,CARD READEROPT | DMA-500 | W-I | 2410-04-0459 | 1.000 |
| 10 | CABLE CLAMP,FLAT,3/8 | CFCC-4 | RICH | 2810-00-0019 | 1.000 |
| 11 | CAP,SEALING,W/CHAIN | 208652-1 | AMP | 2113-33-0004 | 1.000 |
| 12 | CARD GUIDE,4-1/2 IN | 11633-2 | SCBE | 2112-16-0008 | 2.000 |
| 13 | FISH PAPER,PER B/P | 1414-00-0005 | W-I | 1414-00-0005 | 1.000 |
| 14 | FISHPAPER PER B/P | 1410-30-1190 | W-I | 1410-30-1190 | 1.000 |
| 15 | SCW,SBH,2-56X1/2 | 4006MP | F-S | 2810-17-2108 | 8.000 |
| 16 | SCW,SBH,4-40X5/16 | 4023MP | F-S | 2810-17-4105 | 1.000 |
| 17 | CABLE CLAMP,1/8 | 3302 | HEY | 2810-00-0011 | 1.000 |
| 18 | LOWASHER,INT 2 | 1330MP | F-S | 2810-24-2000 | 8.000 |

| WAVETEK PARTS LIST | K022,CD RDR MOD KIT | 1019-00-9001 PAGE: 1 | B REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | IC SKT,PC,14 PIN MC000-073 | C931402 | T-I | 2112-00-0011 | 5.000 |
| 3 | IC SKT,16 PIN MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 8.000 |
| 4 | IC SKT,PC,24 PIN MC000-126 | C932402 | T-I | 2112-00-0013 | 2.000 |
| C01 | CAP,DISC,100V,.01UF | 68U103M | MDC | 1510-10-2103 | 1.000 |
| C02 C04 C05 C06 C07 C08 C09 C10 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 8.000 |
| C03 | CAP,ELEC,50V,10UF | TE1304 | SPR | 1510-20-5100 | 1.000 |
| J10 | HEADER,R.A.,20-PIN | FCC-251-20 | AWC | 2112-08-0025 | 1.000 |
| R01 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R2 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 1.000 |
| R03 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| RN01 RN02 RN03 | RES NTWK,SIP,9-470K | 109-474J | EPITK | 4770-00-0011 | 3.000 |
| U01 | HEX INVERTER STATIC SENSITIVE | CD4049UBE | RCA | 8000-40-4912 | 1.000 |
| U02 | QUAD AND GATE STATIC SENSITIVE | MC14081BCP | MOT | 8001-40-8110 | 1.000 |
| U03 U04 U06 | DUAL D, FLIP-FLOP STATIC SENSITIVE | MC14013BCP | MOT | 8001-40-1310 | 3.000 |
| U05 | COUNTER,14 STAGE BIN STATIC SENSITIVE | CD4020BE | RCA | 8000-40-2002 | 1.000 |
| U07 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| U08 | N-BIT,1 OF 8 DECODER STATIC SENSITIVE | CDP1853CE | RCA | 8000-18-5310 | 1.000 |
| U09 | USE 8001-40-4210 | 8000-40-4210 | W-I | 8000-40-4212 | 1.000 |
| U10 U11 U12 U13 | QUAD D, REGISTER STATIC SENSITIVE | MC14076BAP | MOT | 8001-40-7610 | 4.000 |
| U14 | PROM, MOD1,CD RDR OP FROM;8000-25-1610 | 8410-00-0016 | W-I | 8410-00-0016 | 1.000 |

| WAVETEK PARTS LIST | PC ASSY, CD RDR OPT | 1110-00-9001 PAGE: 1 | C REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PC BD,ZZ1010A | ZZ1010A | W-I | 1710-00-3600 | 1.000 |
| 5 | SPACER,THD,4-40X3/8 HD101-406 | 108303NF | F-S | 2810-02-4106 | 2.000 |
| 6 | SCW,SBH,4-40X1/4 | 4022NF | F-S | 2810-17-4104 | 3.000 |
| 7 | WASH,LOCK,SPRING,4 | 1355 | F-S | 2810-28-0038 | 2.000 |
| 8 | TERMINAL,HT104-003 | 1559-2 | KEY | 2112-19-0001 | 2.000 |
| J26 | HDR,STRT,DBL 20-PIN | 65611-420 | BERG | 2112-07-0068 | 1.000 |

| WAVETEK PARTS LIST | OPT/INTFC BD | 1110-00-9002<br>PAGE: 1 | B<br>REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 6 | CABLE CLAMP,FLAT,1 | CFCC-8 | RICH | 2810-00-0012 | 2.000 |
| J27 | CONN ASSY | 1216-00-9003 | W-I | 1216-00-9003 | 1.000 |

| WAVETEK PARTS LIST | CASE/CHAS INTFC BD | 1110-00-9003<br>PAGE: 1 | C<br>REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PLATE,NUT,PER B/P | 1414-00-0007 | W-I | 1414-00-0007 | 1.000 |
| 2 | NUT,PRESS,2-56 | S-256-2CI | PEM | 2810-09-0011 | 2.000 |

| WAVETEK PARTS LIST | NUT PLATE ASSY | 1111-00-9001<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | CONN,PC,20-PIN | FCC-140-20 | AWC | 2112-35-0002 | 1.000 |
| 4 | TERM,MINI-PV,STRIP | 47437 | BER | 2113-20-0002 | 19.000 |
| 5 | PLUG,POLARIZING MC000-117 | 65307-001 | BER | 2113-23-0001 | 1.000 |
| P26 | CONN,MINI-LATCH,2X10 | 65043-027 | BER | 2113-28-0005 | 1.000 |

| WAVETEK PARTS LIST | CS/CHAS INFC HARNESS | 1219-40-0085 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | CONN,PC,20-PIN | FCC-140-20 | AWC | 2112-35-0002 | 1.000 |
| 4 | TERM,RING,NO.4,INSUL | 4972 | HHS | 2112-03-0021 | 1.000 |
| 9 | TERM,MINI-PVMC000-092 | 47217 | BER | 2113-20-0001 | 1.000 |
| 17 | WIRE,24GA,BK FROM:6012-12-4999 | 6012-12-4000 | W-I | 6012-12-4000 | 12.000 |
| 18 | WIRE,24GA,RD FROM:6012-12-4999 | 6012-12-4222 | W-I | 6012-12-4222 | 7.000 |
| J18 | HSG,MINI-LATCH,2-PIN | 65039-035 | BER | 2113-10-0015 | 1.000 |
| P10 | SOCKET,RIBBON CABLE, 20 CKT. | FCC-210-20 | AWC | 2112-36-0001 | 1.000 |

| WAVETEK PARTS LIST | CHA/OPT BD,INFC HARN | 1219-40-0086 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CHASSIS, CD RDR | 1216-00-9001 | W-I | 1216-00-9001 | 1.000 |
| 2 | ENCLOSURE,PER B/P<br>FROM:3210-12-0007 | 1414-30-0001 | W-I | 1414-30-0001 | 1.000 |
| 4 | DUST COVER,PER B/P | 1414-60-0000 | W-I | 1414-60-0000 | 1.000 |
| 5 | FOOT,RUBBER,6-32STUD | MB-50 | PHILP | 2810-08-0011 | 4.000 |
| 6 | GROMMET,CAN,8.31<br>REF:3210-06-0030 | 2810-10-0032 | W-I | 2810-10-0032 | 1.000 |
| 7 | SCW,SBH,6-32X5/16 | 4033NP | F-S | 2810-17-6105 | 4.000 |
| 8 | MAG CARD | 3010-15-0001 | W-I | 3010-15-0001 | 10.000 |
| 9 | CARD,HEAD CLEANER | 3010-15-0002 | W-I | 3010-15-0002 | 1.000 |
| 10 | MAG CARD HOLDER | 3010-10-0007 | W-I | 3010-10-0007 | 10.000 |
| 11 | CLEANING CARD HOLDER | 3010-10-0008 | W-I | 3010-10-0008 | 1.000 |
| 12 | DECAL,SER.NO. | DMB-11 | W-I | 2410-04-0001 | 1.000 |
| 13 | FOAM PAD,PER B/P | 1414-00-0010 | W-I | 1414-00-0010 | 1.000 |
| 14 | FOAM LINER,PER B/P<br>REF:1610-99-0004 | 1414-00-0009 | W-I | 1414-00-0009 | 1.000 |
| 15 | FOAM LINER PER B/P<br>REF:1610-99-0004 | 1414-00-0008 | W-I | 1414-00-0008 | 1.000 |

| WAVETEK PARTS LIST | CARD READER ASSY | 1118-00-9001<br>PAGE: 1 | C<br>REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PC ASSY, CD RDR | CRW-I-PC | W-I | 1218-00-9001 | 1.000 |
| 2 | HARNESS, CRW-1 | WYCRW-1 | W-I | 1219-00-9001 | 1.000 |
| 3 | MAG CARD RDR,PER BP | 3010-56-0001 | W-I | 3010-56-0001 | 1.000 |
| 4 | MTG PLATE ASSY | 1216-00-9002 | W-I | 1216-00-9002 | 1.000 |
| 5 | BALANCE WEIGHTPER B/P | 1414-00-0006 | W-I | 1414-00-0006 | 1.000 |
| 6 | SPACER,HEX,6-32X1 | 9508 | F-S | 2810-02-6116 | 4.000 |
| 7 | SPACER,HEX 6-32X5/8 | 108325 | F-S | 2810-02-6110 | 4.000 |
| 8 | GROMMET,PLASTIC,1.19 REF;3210-06-0031 | 2810-10-0030 | W-I | 2810-10-0030 | 1.000 |
| 9 | GROMMET,PLASTIC,.44 REF;3210-06-0031 | 2810-10-0031 | W-I | 2810-10-0031 | 1.000 |
| 10 | CABLE CLAMP,1/8 | 3302 | HEY | 2810-00-0011 | 1.000 |
| 11 | SCW,SBH,6-32X3/8 | 4034NP | F-S | 2810-17-6106 | 9.000 |
| 12 | SCW,SBH,6-32X1/4 | 6-32X1/4,UC,BH,NP | S-S | 2810-17-6104 | 4.000 |
| 13 | SCW,SBH,6-32X1/2 | 4036NP | F-S | 2810-17-6108 | 1.000 |
| 14 | LWASHER,SPLIT,6 HW107-600 | 1358NP | F-S | 2810-28-0019 | 14.000 |
| 15 | CABLE TIE,4 | PLTIM-MP | PAND | 2810-00-0010 | 2.000 |

| WAVETEK PARTS LIST | CHASSIS, CD RDR | 1216-00-9001 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PLATE,MTG,PER B/P | 1414-60-0001 | W-I | 1414-60-0001 | 1.000 |
| 2 | STUD,SELF-CLINCH, 6-32X1/2 | FH-632-8CI | PEM | 2810-47-0001 | 8.000 |
| 3 | NUT,PRESS,6-32 | S-632-3CI | PEM | 2810-09-0010 | 8.000 |

| WAVETEK PARTS LIST | MTG PLATE ASSY | 1216-00-9002 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | RECPT,16 CKT,FLANGED | 206036-1 | AMP | 2113-11-0003 | 1.000 |
| 2 | PIN,MALE,WIRE-WRAP | 66460-7 | AMP | 2113-12-0003 | 16.000 |
| 3 | SEAL,AMP CONN,.875 | 206403-2 | AMP | 2113-33-0003 | 1.000 |
| 4 | NUT,PRESS,2-56 | S-256-2CI | PEM | 2810-09-0011 | 4.000 |

| WAVETEK PARTS LIST | CONN ASSY | 1216-00-9003 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 2 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 8.000 |
| 3 | IC SKT,PC,14 PIN MC000-073 | C931402 | T-I | 2112-00-0011 | 11.000 |
| 4 | IC SKT,16 PIN MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 3.000 |
| 5 | SCW,SBH,6-32X1/4 | 6-32X1/4,UC,BH,NP | S-S | 2810-17-6104 | 4.000 |
| 6 | INT,LOWASHER,6 HW101-600 | 1304ZP | F-S | 2810-24-6000 | 4.000 |
| 7 | NUT,6-32X1/4HW101-600 | 9005NP | F-S | 2810-14-6100 | 4.000 |
| 8 | WASH,NO.6,5/160.D. | 97311 | F-S | 2810-26-0015 | 2.000 |
| 9 | WASH,INAULRING | 43-77-2 | THR | 2810-28-0039 | 2.000 |
| C01 C14 | CAP,MICA,500V,200PF | DM15-201J | S-F | 1510-50-0201 | 2.000 |
| C02 | CAP,MICA,500V,100PF | DM15-101J | C D | 1510-50-0101 | 1.000 |
| C03 C04 C06 C15 | CAP,TANT,25V,1UF | 100DE105K25A2 | ACI | 1510-21-7010 | 4.000 |
| C05 C09 C10 C17 | CAP,MICA,500V,.001UF | DM15-102J | ARC | 1510-50-0102 | 4.000 |
| C07 | CAP,MICA,500V,510PF | DM-15-511J | ARC | 1510-50-0511 | 1.000 |
| C08 | CAP,MICA,500V,2000PF | DM19-202J | ARC | 1510-50-0202 | 1.000 |
| C11 C19 | CAP,TANT,25V,10UF | 100DE106M20C2 | ACI | 1510-21-7100 | 2.000 |
| C12 | CAP,TANT,35V,47UF | T310D476-035AS | UNCAR | 1510-22-4470 | 1.000 |
| C13 | CAP,MICA,500V,680PF | DM15-681J | ARC | 1510-50-8681 | 1.000 |
| C16 | CAP,MICA,300V,10PF | DM-5CC100J | ARC | 1510-50-1100 | 1.000 |
| C18 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 1.000 |
| CR01 CR02 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| J01 | HEADER,RA,6-PIN REF:2112-08-0005 | 2112-08-0024 | W-I | 2112-08-0024 | 1.000 |
| L01 | CHOKE,MOLDED,510UH | 2500-14 | DEL | 1810-01-5100 | 1.000 |
| Q01 Q02 | PROT PWR DARLINGTON | LM395T | NAT | 4902-00-3950 | 2.000 |
| Q03 Q04 | POWER,FET SCX VN46AF SCX, STATIC SENS. | VN46AF | SCX | 4902-00-0460 | 2.000 |
| R01 R02 R03 R07 R13 R27 R28 R29 R30 R31 R37 R39 R40 R41 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 14.000 |
| R04 | RES,C,1/4W,5%,15 | CF1/4-15 | ASE | 4700-15-1509 | 1.000 |
| R05 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 1.000 |
| R06 | RES,MF,1/8W,1%,182K | RN55D-182K | MILSP | 4701-03-1823 | 1.000 |
| R08 R36 | RES,C,1/4W,5%,1M | CF1/4-1M | ASE | 4700-15-1004 | 2.000 |

| WAVETEK PARTS LIST | PC ASSY, CD RDR | 1218-00-9001 PAGE: 1 | F REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| R09 | RES,C,1/4W,5%,560K | CF1/4-560K | ASE | 4700-15-5603 | 1.000 |
| R10 R11 | RES, MF,1/8W,1%,475 | RN55D-475 | MILSP | 4701-03-4750 | 2.000 |
| R12 | RES,MF,1/8W,1%,3.92K | RN55D-3.92K | MILSP | 4701-03-3921 | 1.000 |
| R14 R15 R16 R22 R24 R35 | RES,C,1/4W,5%,4.7K | CF1/4-4.7K | ASE | 4700-15-4701 | 6.000 |
| R17 R18 | RES,MF,1/8W,1%,10K | RN55D-10K | MILSP | 4701-03-1002 | 2.000 |
| R20 R21 | RES,C,1/4W,5%,2K | CF1/4-2K | ASE | 4700-15-2001 | 2.000 |
| R23 R25 R38 | RES,C,1/4W,5%,1K | CF1/4-1K | ASE | 4700-15-1001 | 3.000 |
| R26 | RES,C,1/4W,5%,470K | CF1/4-470K | ASE | 4700-15-4703 | 1.000 |
| R32 | RES,C,1/4W,5% 1.3K | CF1/4-1.3K | ASE | 4700-15-1301 | 1.000 |
| R33 R34 | RES,C,1/4W,5%,39K | CF1/4-39K | ASE | 4700-15-3902 | 2.000 |
| U01 U02 | QUAD ANALOG SWITCH STATIC SENSITIVE | MC14066BCP | MOT | 7001-40-6612 | 2.000 |
| U03 U04 | OP AMP,DUAL,3MHZ | NE5530 | SIG | 7000-55-3000 | 2.000 |
| U05 | IC,IL004-001 | LM339N | NAT | 7000-03-3900 | 1.000 |
| U06 U08 U14 U15 U16 | QUAD NAND STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 5.000 |
| U07 | DUAL MONOSTABLE F-F STATIC SENSITIVE | MC14538BCP | MOT | 8001-45-3812 | 1.000 |
| U09 U20 | HEX INVERTER STATIC SENSITIVE | CD4049UBE | RCA | 8000-40-4912 | 2.000 |
| U10 U11 U12 U13 U17 U22 | DUAL 2-INP NAND DRVR STATIC SENSITIVE | CD40107BE | RCA | 8004-01-0712 | 6.000 |
| U18 | DUAL D, FLIP-FLOP STATIC SENSITIVE | MC14013BCP | MOT | 8001-40-1310 | 1.000 |
| U19 | DUAL AND-OR-INVERT STATIC SENSITIVE | CD4085BE | RCA | 8000-40-8512 | 1.000 |
| U21 | TRIPLE 3-INP NAND STATIC SENSITIVE | CD4023BE | RCA | 8000-40-2312 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | BRKT,CABLE,PER B/P | 1414-00-0004 | W-I | 1414-00-0004 | 1.000 |
| 2 | STRAIN RELIEF,.625 | 1220 | HEY | 2810-37-0008 | 1.000 |
| 3 | CABLE, 15 COND,RETR | 6011-70-0003 | W-I | 6011-70-0003 | 1.000 |
| 4 | TERM,MINI-PVMC000-092 | 47217 | BER | 2113-20-0001 | 15.000 |
| 5 | PLUG,POLARIZING MC000-117 | 65307-001 | BER | 2113-23-0001 | 1.000 |
| 6 | SOCKET FOR AMP PLUG | 66105-1 | AMP | 2113-12-0002 | 15.000 |
| 7 | STRAIN RELIEF FROM:2113-33-0001 | 2113-33-0002 | W-I | 2113-33-0002 | 1.000 |
| 8 | CABLE GRIP FROM:2113-34-0001 | 2113-34-0002 | W-I | 2113-34-0002 | 1.000 |
| P03 | CONN.MINI-LATCH,2X8 | 65043-029 | BER | 2113-28-0004 | 1.000 |
| P27 | PLUG,16 CKT | 206037-1 | AMP | 2113-11-0002 | 1.000 |

| WAVETEK PARTS LIST | HARNESS, CRW-1 | 1219-00-9001 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | ME-1 PC ASSY | ME-1-PC | W-I | 1110-40-9010 | 1.000 |
| 2 | HARNESS,BATT BACKUP | WY1865-BATT | W-I | 1219-40-9009 | 1.000 |
| 3 | CARD GUIDE,4-1/2 IN | 11633-2 | SCBE | 2112-16-0008 | 2.000 |
| 4 | DECAL,ME-1 OPTION | 2414-04-9001 | W-I | 2414-04-9001 | 2.000 |
| IC307 | PROM,MEM EXP INTFC,L<br>FROM:8000-25-1610 | 8410-00-0021 | W-I | 8410-00-0021 | 1.000 |
| IC308 | PROM,MEM EXP INTFC,R<br>FROM:8000-25-1610 | 8410-00-0022 | W-I | 8410-00-0022 | 1.000 |

| WAVETEK PARTS LIST | OPT ME-1 | 1019-40-9012<br>PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG MFGR PART NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | PC BOARD,REVB | 1714-00-9002 | W-I | 1714-00-9002 | 1.000 |
| 2 | IC SKT,PC,14 PIN<br>MC000-073 | C931402 | T-I | 2112-00-0011 | 2.000 |
| 3 | IC SKT,16 PIN<br>MC000-074 | DILB-16P-108 | BURND | 2112-00-0012 | 4.000 |
| 4 | IC SKT,PC,24 PIN<br>MC000-126 | C932402 | T-I | 2112-00-0013 | 3.000 |
| 5 | IC, SKT,28-PIN | C842802 | T-I | 2112-00-0023 | 2.000 |
| 6 | IC SKT,8 PIN | DILB-8P-108 | BURND | 2112-00-0007 | 1.000 |
| C01 C02 C03 C04 | CAP,DISC,100V,.15UF | CY20A154M | C-L | 1510-11-1154 | 4.000 |
| C05 C06 C07 | CAP,MON,50V,1UF | 3420-050-E105M | AER | 1510-11-3105 | 3.000 |
| C08 | CAP,MICA,100V,1000PF | ADM-15CA102J | ARC | 1510-50-6102 | 1.000 |
| C09 C10 C11 | CAP,TANT,20V,100UF | T3100107 020AS | UNCAP | 1510-22-3101 | 3.000 |
| CR01 | DIODE,RECT,50V | IN5802 | UNIT | 4806-01-5802 | 1.000 |
| CR02 CR03 | DIODE,SIGNAL | 1N914 | G-E | 4807-01-0914 | 2.000 |
| IC01 | QUAD NAND<br>STATIC SENSITIVE | MC14011BCP | MOT | 8001-40-1112 | 1.000 |
| IC02 | QUAD TRUE CMPLT BFFR<br>STATIC SENSITIVE | CD4041AE | RCA | 8000-40-4110 | 1.000 |
| IC03 | PROM, AVERAGER<br>FROM:8000-25-1610 | 8410-00-0024 | W-I | 8410-00-0024 | 1.000 |
| IC04 | PROM, NORMALIZER<br>FROM:8000-25-1610 | 8410-00-0025 | W-I | 8410-00-0025 | 1.000 |
| IC06 | PROM, STACKER<br>FROM:8000-25-1610 | 8410-00-0023 | W-I | 8410-00-0023 | 1.000 |
| IC07 IC12 | DIVIDER,PGM,8-BYTE<br>STATIC SENSITIVE | CDP1855CE | RCA | 8000-18-5510 | 2.000 |
| IC8 IC9 | STATIC RAM,2048 X 8<br>STATIC SENSITIVE | TC5517AP | TSHBA | 8000-55-1710 | 2.000 |
| IC13 IC14 | QUAD LATCH<br>STATIC SENSITIVE | MC14042BCP | MOT | 8001-40-4210 | 2.000 |
| IC15 | DCDR/DEMUXR | SN74LS138N | T-I | 8007-41-3810 | 1.000 |
| IC16 | PULSE WD MOD CTL CKT | TL494CN | T-I | 8000-04-9400 | 1.000 |
| IC17 | VOLT REF, PGMBL | ICL8212CPA | INTSL | 7000-82-1200 | 1.000 |
| L01 | CHOKE,MOLDED,510UH | 2500-14 | DEL | 1810-01-5100 | 1.000 |
| L02 | COIL,110 T<br>REF:1813-00-0031 | 1210-30-0008 | W-I | 1810-06-0002 | 1.000 |
| P41 | HDR,RA,3-PIN<br>REF:2112-08-0000 | 2112-08-0018 | W-I | 2112-08-0018 | 1.000 |

| WAVETEK PARTS LIST | ME-1 PC ASSY | 1110-40-9010<br>PAGE: 1 | A<br>REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| Q01 | TRANS QA039-060 | 2N3906 | T-I | 4901-03-9060 | 1.000 |
| R01 R02 | RES NTWK,SIP,9-470K | 109-474J | EPITK | 4770-00-0011 | 2.000 |
| R03 R04 | RES,C,1/4W,5%,100K | CF1/4-100K | ASE | 4700-15-1003 | 2.000 |
| R05 | RES NTWK,SIP,9-10K | 109-103J | EPITK | 4770-00-0012 | 1.000 |
| R06 | RES,MF,1/8W,1%,200K | RN55D-200K | MILSP | 4701-03-2003 | 1.000 |
| R07 | RES,C,1/4W,5%,51K | CF1/4-51K | ASE | 4700-15-5102 | 1.000 |
| R08 | RES,MF,1/8W,1%,10K | RN55D-10K | MILSP | 4701-03-1002 | 1.000 |
| R09 | RES,C,1/4W,5%,100 | CF1/4-100 | ASE | 4700-15-1000 | 1.000 |
| R10 | POT,CERMET,20K | A2B203 | A-B | 4610-13-4203 | 1.000 |
| R11 | RES,C,1/4W,5%,10K | CF1/4-10K | ASE | 4700-15-1002 | 1.000 |
| R12 | RES,C,1/4W,5%,200K | CF1/4-200K | ASE | 4700-15-2003 | 1.000 |
| R13 | RES,C,1/4W,5%,360K | CF1/4-360K | ASE | 4700-15-3603 | 1.000 |
| R14 | RES,C,1/4W,5%,56K | CF1/4-56K | ASE | 4700-15-5602 | 1.000 |
| R15 | RES,C,1/4W,5%,3.9K | CF1/43.9K | ASE | 4700-15-3901 | 1.000 |
| R16 | RES,C,1/4W,5%,4.7K | CF1/4-4.7K | ASE | 4700-15-4701 | 1.000 |
| R17 | POT,CERMET,100K | A2B104 | A-B | 4610-13-4104 | 1.000 |

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | ADAPTER,DUAL SPADE | 5081(HHS) | HHS | 2112-03-0033 | 2.000 |
| 2 | TERM,MINI-PVMC000-092 | 47217 | BER | 2113-20-0001 | 2.000 |
| 3 | PLUG,POLARIZING MC000-117 | 65307-001 | BER | 2113-23-0001 | 1.000 |
| J41 | HSG,MINI-LATCH,3-PIN MC000-128 | 65039-034 | BER | 2113-10-0008 | 1.000 |
| R101 | RES,C,1/4W,5%,10 | CF1/4-10 | ASE | 4700-15-1009 | 1.000 |

| WAVETEK PARTS LIST | HARNESS,BATT BACKUP | 1219-40-9009 PAGE: 1 | REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 1 | CHASSIS BATTERY CHARGER-BC3 | 1410-60-1810 | W-I | 1410-60-1810 | 1.000 |
| 2 | COVER(BATT.CHG. BC3) | 1410-30-1870 | W-I | 1410-30-1870 | 1.000 |
| 5 | STRAIN REL. BUSHING HB104-002 | SR-5P-4 BLK | HEY | 2810-37-0001 | 2.000 |
| 6 | FUSEHOLDER,BODY WITH MTNG.NUT | 031.1653 | PCC | 2410-05-0010 | 1.000 |
| 7 | FUSE CARRIER, 3AG | 031.1666 | PCC | 2410-05-0009 | 1.000 |
| 8 | SHIELD,FUSE HOLDER HZ000-001 | 331 | HHS | 2810-12-0012 | 1.000 |
| 9 | FEET,HH102-002 | PP-40013 | BUCK | 2810-08-0003 | 4.000 |
| 10 | RIVET.1/8X5/16 | 1162-0408 | AVDEL | 2810-30-0007 | 2.000 |
| 11 | DECAL,WARNING 3000RP | RPD-41 | W-I | 2410-04-0299 | 1.000 |
| 12 | DECAL,SER.NO. | DMB-11 | W-I | 2410-04-0001 | 1.000 |
| 13 | SCW,SBH,6-32X3/8 | 4034NP | F-S | 2810-17-6106 | 12.000 |
| 14 | INT,LOWASHER,6 HW101-600 | 1304ZP | F-S | 2810-24-6000 | 12.000 |
| 28 | A C COVER PER B/P | 1410-01-1530 | W-I | 1410-01-1530 | 1.000 |
| 29 | NUT,6-32X1/4HN101-600 | 8005NP | F-S | 2810-14-6100 | 1.000 |
| 30 | GROUND LUG,#6,INT HG102-600 | 38-111 | F-S | 2112-03-0003 | 7.000 |
| CR01 | DIODE,RECT,200V | 1N5624 | G-E | 4806-01-5624 | 1.000 |
| CR02 | LED,RED,T-1-3/4 | NSL5046 | NAT | 4810-02-0001 | 1.000 |
| F01 | FUSE,S.B.,2AMP | MDX-2 | BUS | 2410-05-0001 | 1.000 |
| HH1 | HARNESS,BC-3-A | WYBC-3-A | W-I | 1219-00-0324 | 1.000 |
| HH2 | HARNESS,BC-3-B | WYBC-3-B | W-I | 1219-00-0325 | 1.000 |
| HH3 | HARNESS,BC-3-C | WYBC-3-C | W-I | 1219-00-0326 | 1.000 |
| HH4 | HARNESS,BC-3-D | WYBC-3-D | W-I | 1219-00-0327 | 1.000 |
| P01 | CORD SET,18/3SVT,6FT BK,MLD.CAP,UL-APPRV | 6011-80-0001 | ECMC | 6011-80-0001 | 1.000 |
| PS1 | POWER SUPPLY,AC,15V | ES-15E | PWRMT | 4010-00-0004 | 1.000 |
| R01 | RES,C,1W,5%,360 | GB3615 | A-B | 4700-35-3600 | 1.000 |
| S02 | SWITCH,SLIDE,DPDT | 4021.0512 | MARQ | 5105-00-0011 | 1.000 |

| WAVETEK PARTS LIST | AC PWR SUPPLY, BC3 | 1019-00-0177 PAGE: 1 | D REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 15 | HEATER CORD,2 COND, 18 GA. | 19328 | BEL | 6014-51-8000 | 4.000 |
| J2 | CONN,FEM,PER B/P FROM:2113-29-0001 | 2113-29-0003 | W-I | 2113-29-0003 | 1.000 |

| WAVETEK PARTS LIST | HARNESS,BC-3-A | 1219-00-0324 PAGE: 1 | A REV |
|---|---|---|---|

| REFERENCE DESIGNATORS | PART DESCRIPTION | >< ORIG-MFGR-PART-NO | MFGR | WAVETEK NO. | QTY |
|---|---|---|---|---|---|
| 15 | WIRE,18,BL<br>FROM:6012-31-8999 | 6012-31-8666 | W-I | 6012-31-8666 | 13.000 |
| 16 | WIRE,18,BN<br>FROM:6012-31-8999 | 6012-31-8111 | W-I | 6012-31-8111 | 22.000 |
| S01 | SWITCH,TOGGLE DPDT | 9201P3HZQ | C-K | 5106-00-0016 | 1.000 |

| WAVETEK PARTS LIST | HARNESS,BC-3-C | 1219-00-0326<br>PAGE: 1 | B<br>REV |
|---|---|---|---|

SECTION 8

SCHEMATIC LIST

1855B

Top View
Bottom View
Wiring Dagram
Main Boards 1 & 2
DPS10 PC Layout
DPS10 Schematic
Front Panel Board Schematic
Microprocessor Board Schematic
Latch Card, Schematic
Ramp Card PC Layout
Ramp Card Schematic
M135-50 Schematic
M171 PC Layout
M171 Schematic
M9L-1 Schematic
M138 PC Layout
M138 Schematic

SCHEMATIC LIST

1865B

Top View
Bottom View
Wiring Diagram
M117 Schematic
M118 Schematic
M119-50/-155/-43 Band Pass
M119 Phase Lock PC Layout
M119-50 Schematic
CRT Schematic
Timing Card PC Layout
Timing Card Schematic
Register Card PC Layout
Register Card Schematic
Microprocessor Card PC Layout
Microprocessor Card Schematic
A/D Card PC Layout
A/D Card Schematic
Power Supply DPS5 Layout
Power Supply DPS5 Schematic
Power Supply DPS3 & 4 Layout
Power Supply DPS4 Schematic
Power Supply DPS3 Schematic
Power Supply DPS1 & 2 Layout
Power Supply DPS1 & 2 Schematic

SCHEMATIC LIST

OPTIONS

M135-5 Schematic

M135-155 Diode Switch PC Layout

M135-155 PC Layout

M135-155 Schematic

M119-155 Osc. PC Layout

M119-155 Diode Switch PC Layout

M119-155 Schematic

M119-5 Osc. PC Layout

M119-5 Band Pass Amp PC Layout

M119-5 Schematic

M113 Pilot Carrier Notch Schematic

M152 PC Layout

M152 Schematic

BC-3 Wiring Diagram

BC-3 PC Layout

BC-3 PC Schematic

CRW-1 Installation Assembly Drawing

CRW-1/1865 Mod. Kit Wiring Diagram

CRW-1/1865 Interface Wiring Diagram

CRW-1/1865 Option Board Schematic

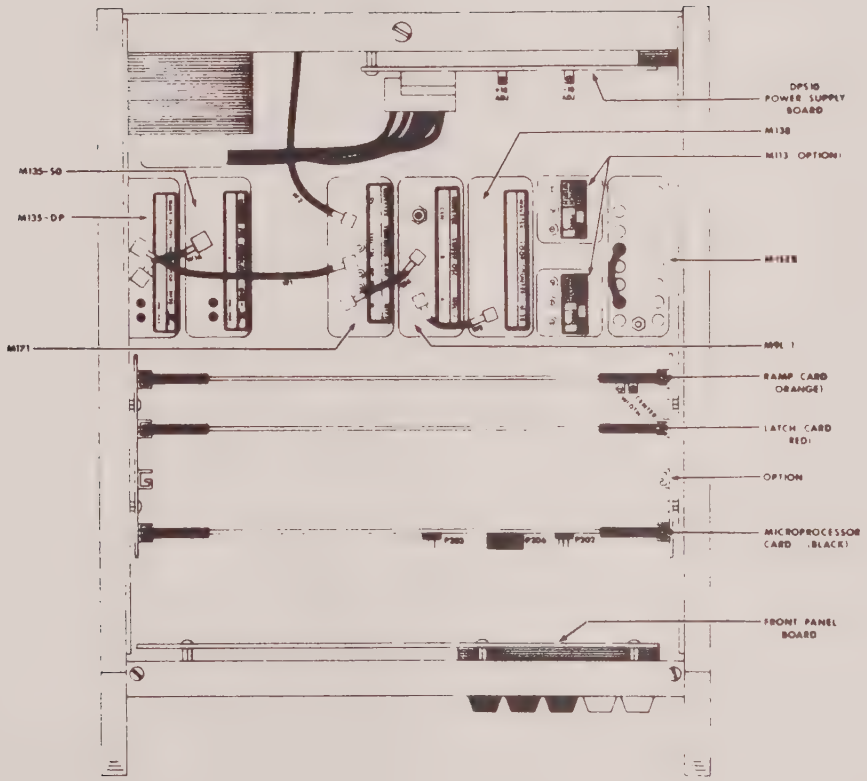
CRW-1 Wiring Diagram

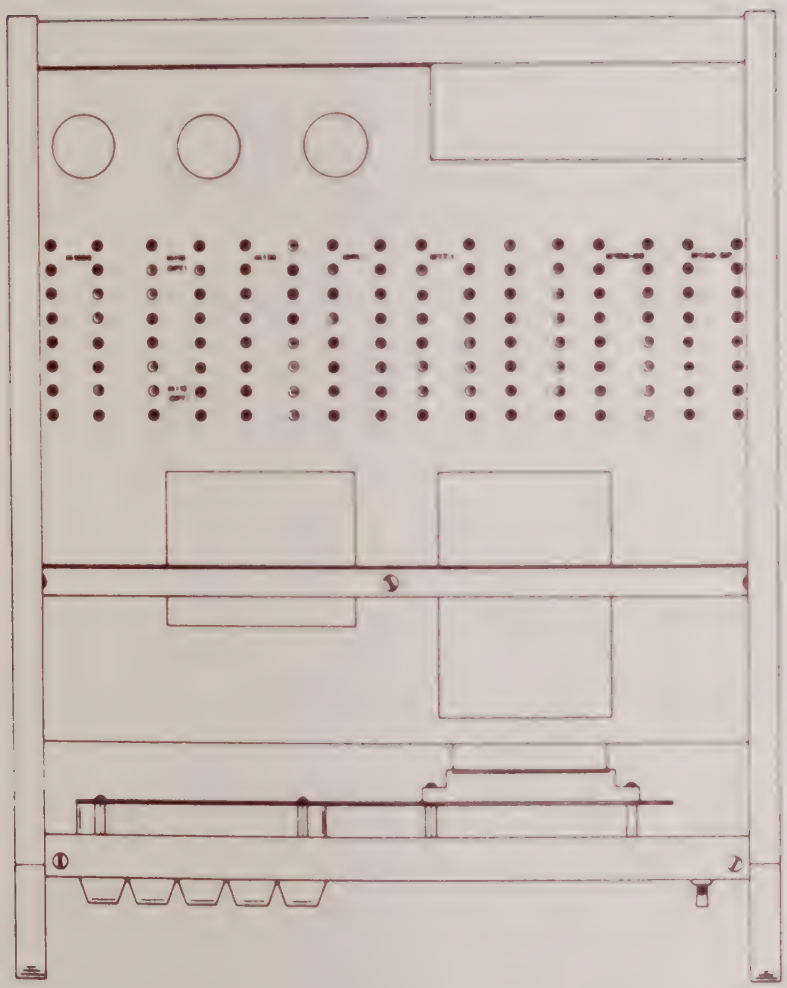
Card Reader Board PC Layout

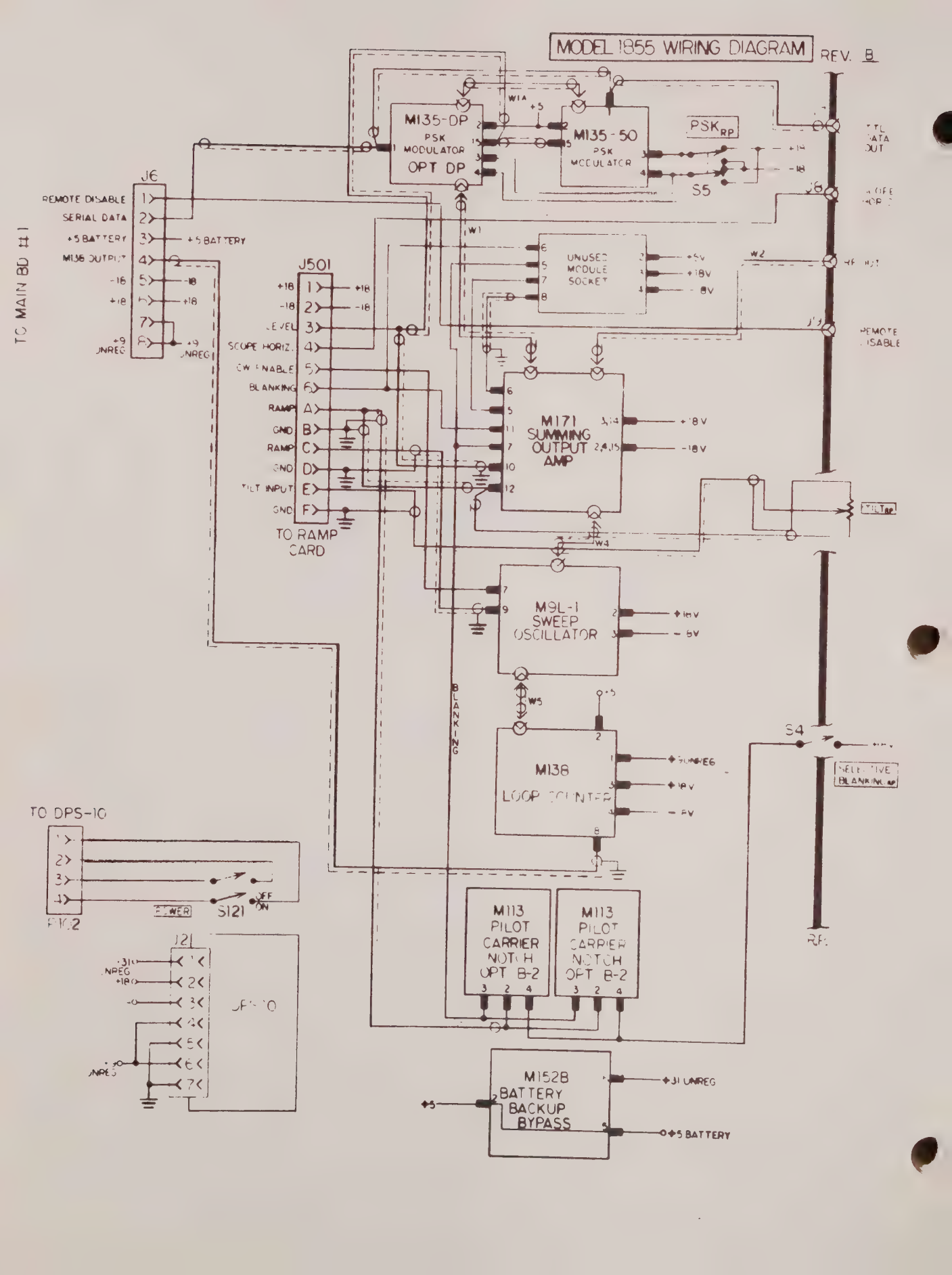
Card Reader Board Schematic

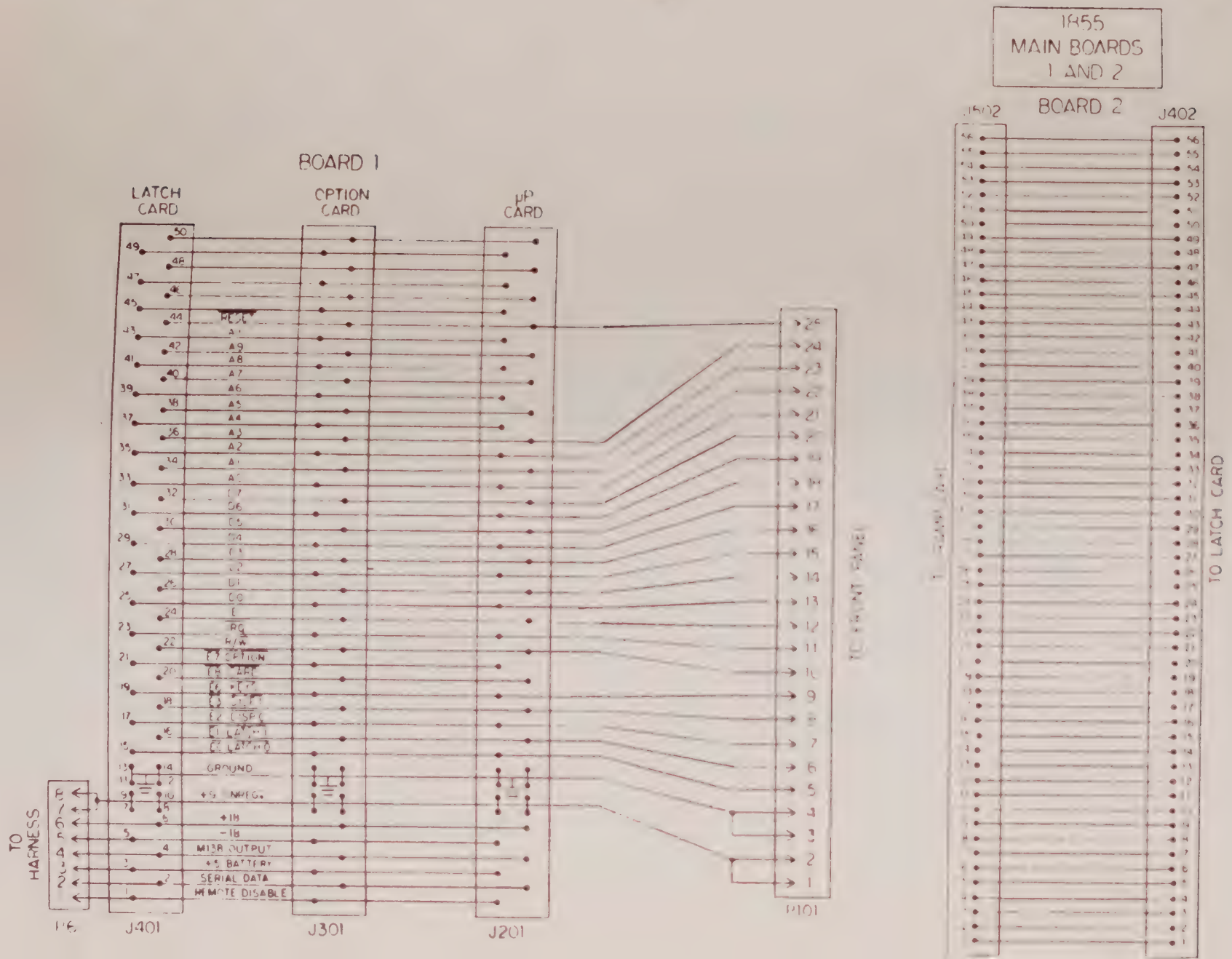
ME-1 PC Layout

ME-1 PC Schematic

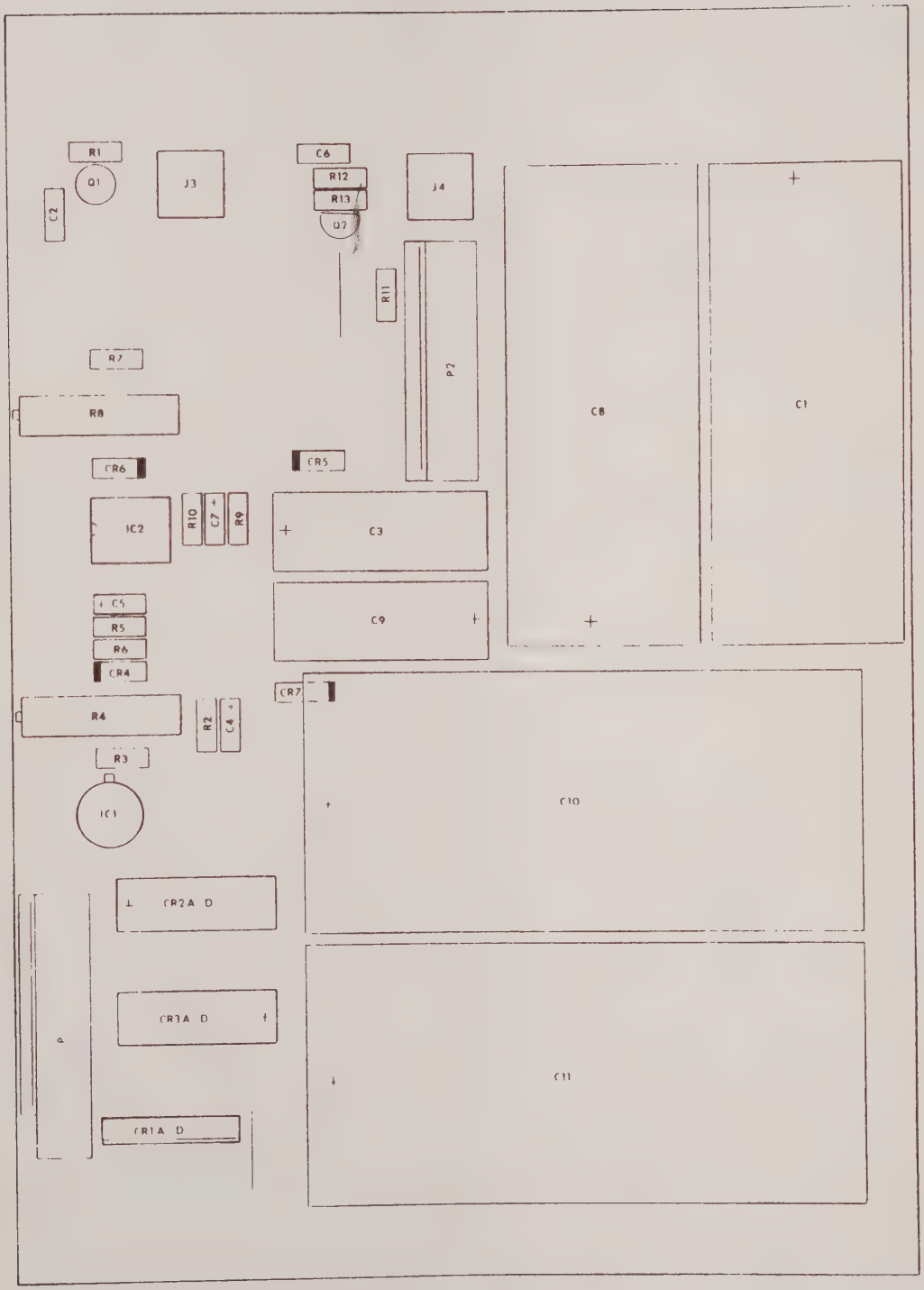

DPS 10
POWER SUPPLY
BOARD
M138
M113 OPTION
M135-SD
M135-DP
M171
RAMP CARD
(ORANGE)
LATCH CARD
(RED)
OPTION
MICROPROCESSOR
CARD (BLACK)
FRONT PANEL
BOARD



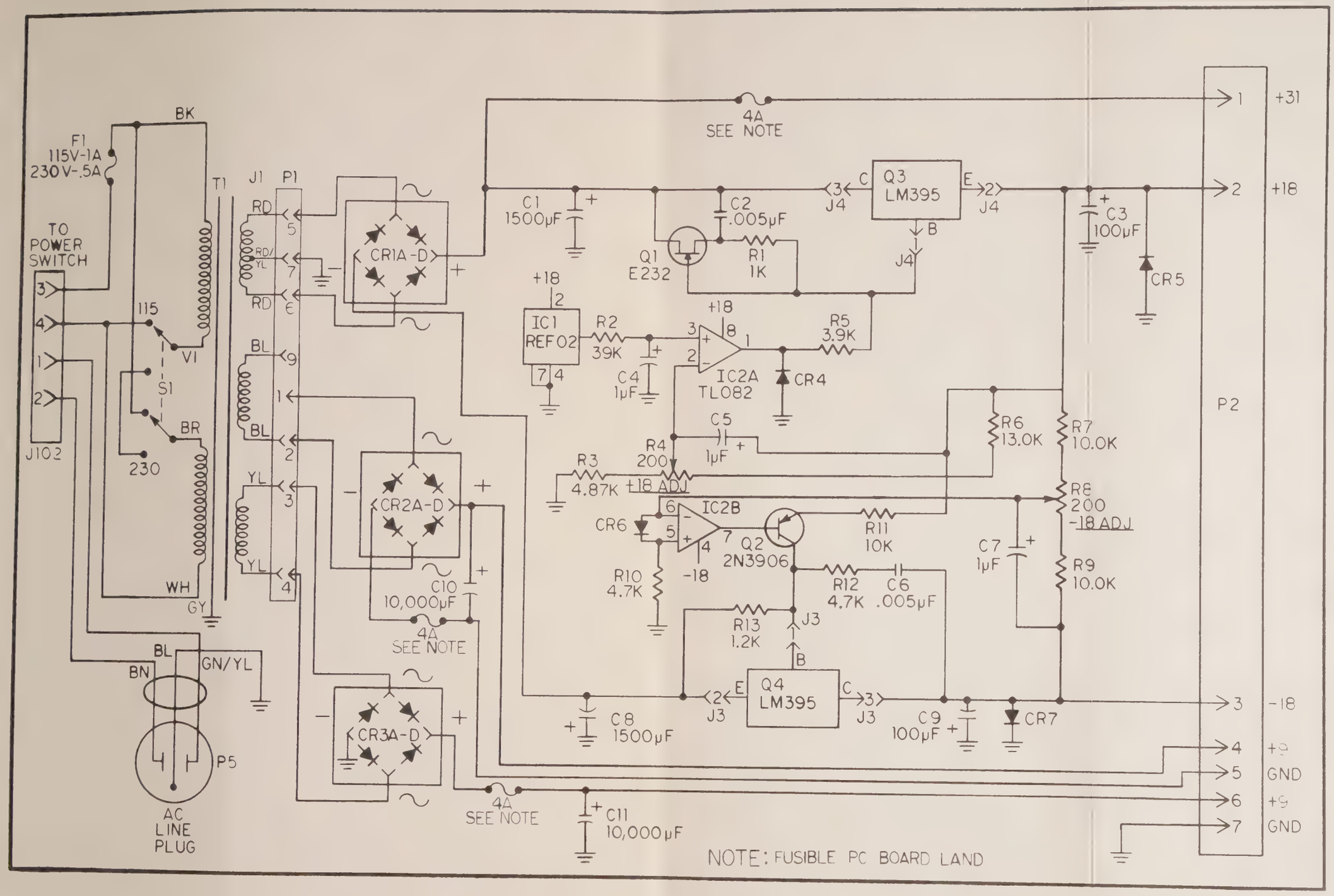

MODEL 1855 WIRING DIAGRAM
REV. B
TO MAIN BD #1
M135-DP
PSK MODULATOR
OPT DP
M135-50
PSK MODULATOR
PSK RP
S5
J6
REMOTE DISABLE
SERIAL DATA
+5 BATTERY
M136 OUTPUT
+9 UNREG
J501
TO RAMP CARD
UNUSED MODULE SOCKET
M171
SUMMING OUTPUT AMP
M9L-1
SWEEP OSCILLATOR
M138
LOOP COUNTER
S4
TO DPS-10
S121
J21
M113
PILOT CARRIER NOTCH OPT B-2
M113
PILOT CARRIER NOTCH OPT B-2
M152B
BATTERY BACKUP BYPASS
+31 UNREG
+5 BATTERY
BLANKING
RF


1855
MAIN BOARDS
1 AND 2
BOARD 1
LATCH CARD
OPTION CARD
μP CARD
BOARD 2
J502
J402
TO HARNESS
GROUND
+5 UNREG.
+18
-18
MISR OUTPUT
+5 BATTERY
SERIAL DATA
REMOTE DISABLE
J401
J301
J201
P101
TO FRONT PANEL
TO LATCH CARD

DPS 10


R1
Q1
J3
C2
C6
R12
R13
Q2
J4
R11
P2
C8
C1
R7
R8
CR6
CR5
IC2
R10
C7
R9
C3
C5
R5
R6
CR4
C9
CR7
R4
R2
C4
R3
IC1
C10
CR2A D
CR3A D
C11
P
CR1A D

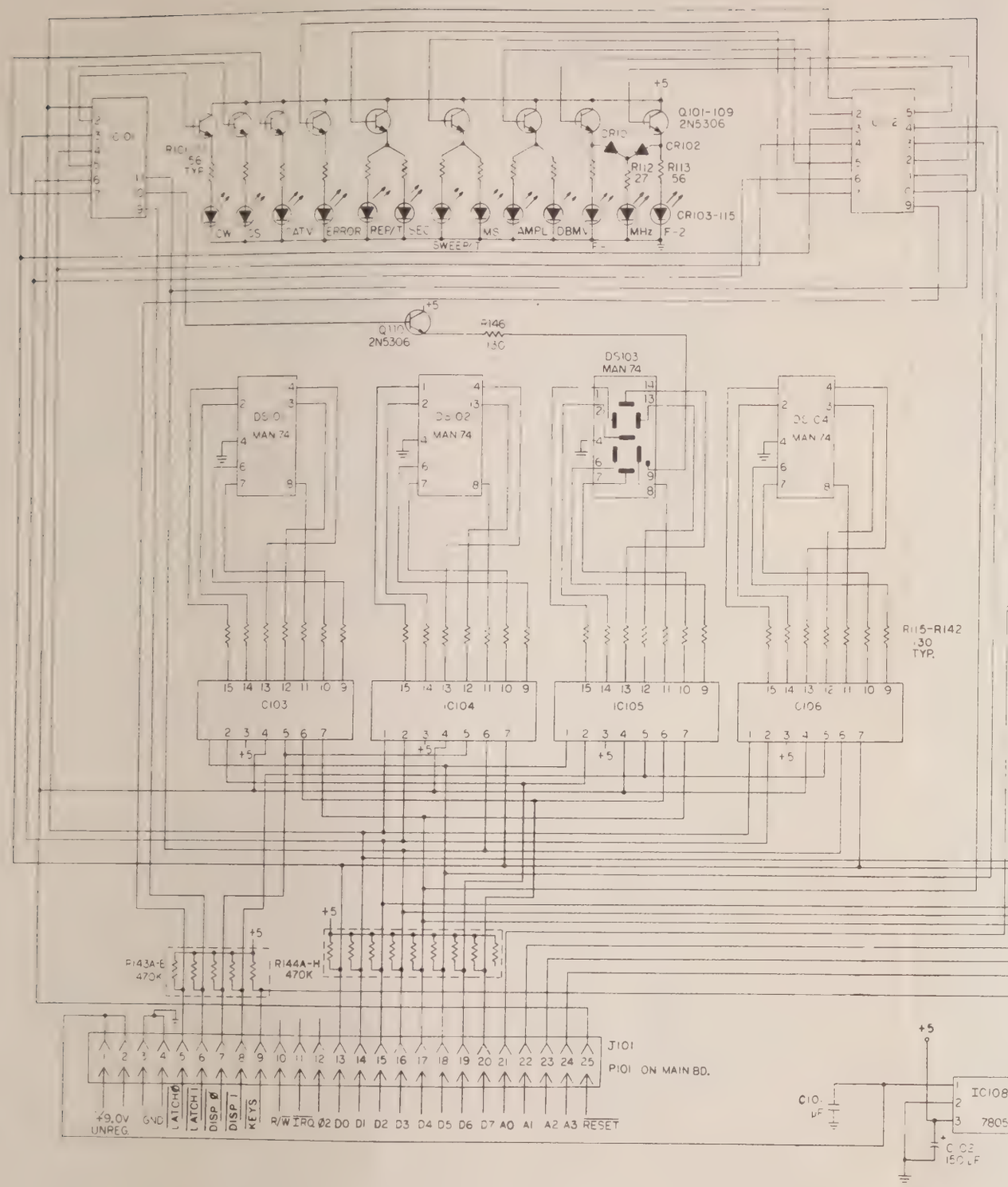
DPS 10
POWER SUPPLY

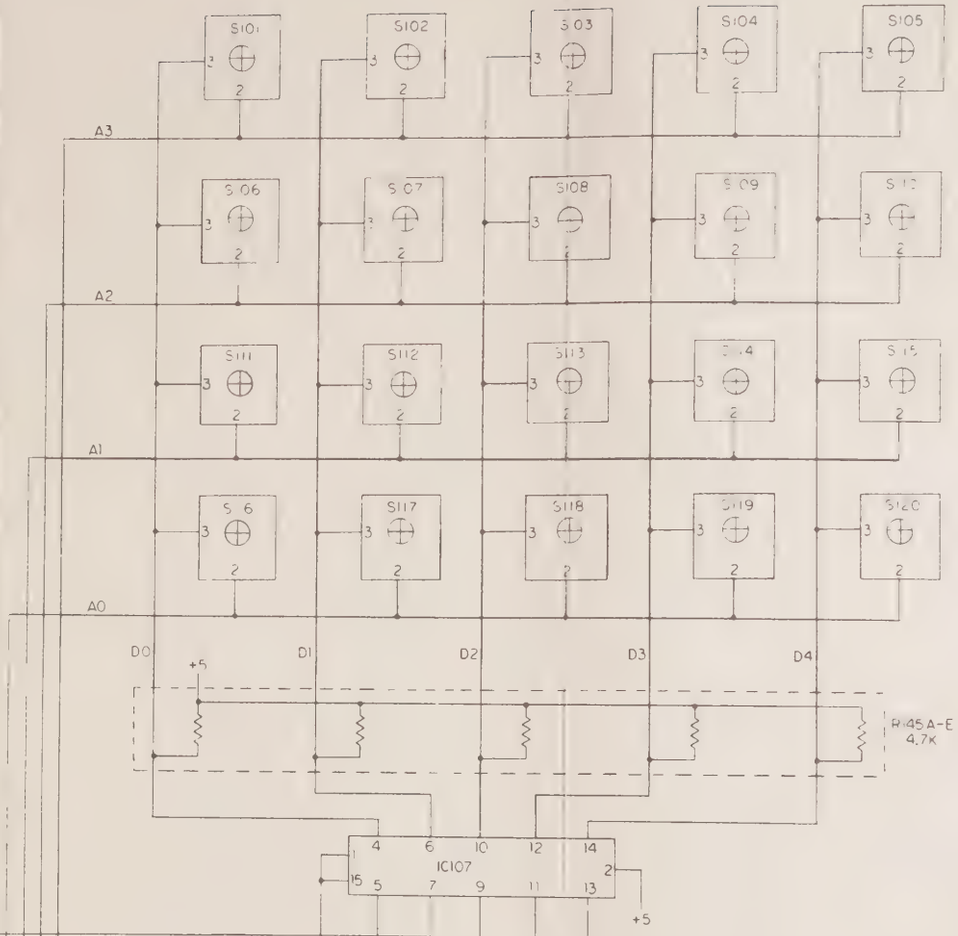



| REVISIONS | | |
|---|---|---|
| | ECN'S | BY |

WAVETEK INDIANA

# MODEL 1855
# FRONT PANEL BOARD




| POWER CHART | | | |
|---|---|---|---|
| REF | DEVICE | +5 | GND |
| IC101,2 | CD401748 | 16 | 8 |
| IC103,4,5,6 | CD4511B | 16 | 8 |
| IC107 | 8T96 | 16 | 8 |
| S101-120 | 100ISD4A35 | 4 | 1 |

# MODEL 1855 μPROCESSOR CARD REV. A

R202A-H 470K TYP
DIP JUMPER 204
R203A-G 470K TYP
R219 200K
C202 .01μF
C203 27
C204 27
X201
IC201 6802
C201 .01μF
R201 3.3K
IC202A 7404
IC202E
P203
J203
IC203 LS138
IC204 LS138
DIP JUMPER 205
R204A-G 4.7K TYP
R222 470K
IC205 (ROM 0) OR 6831 2716
IC206 (ROM 1) OR 6831 2716
IC207 (PTM) 6840
IC208 LS240
R205A-H 4.7K TYP
DIP JUMPER 206
IC202C
IC202B
R221 560K
IC210 LS30
IC202D
IC212 LS245
IC213 LS244
IC214 8T95
M138 OUTPUT
R208 442K
IC209A LM393
R209 110K
R206 91.0K
C205 .01μF
C206 1μF
R207 13.0K
R210 51K
C207 470
R211 51K
R220 33K
Q201 2N3906
R212 5.1K
R213 10K
Q202 2N3904
R214 49.9K
C212 10μF
R218 10M
IC209B
R216 1M
R215 49.9K
R217 3.3K
IC211 7805
C208 1μF
C209 1μF
C210 150μF
C211 150μF
C213 1μF
C214 1μF
P201
P202
S.A. CONNECTOR

# 1855 LATCH CARD REV A

| POWER CHART | | | |
|---|---|---|---|
| IC- | DEVICE | GND | +5V |
| 402 | LS273 | 10 | 20 |
| 403 | " | " | " |
| 405 | " | " | " |
| 406 | " | " | " |
| 407 | " | " | " |
| 408 | " | " | " |
| 404 | LS175 | 8 | 16 |
| 410 | LS02 | 7 | 14 |
| 409 | LS138 | 8 | 16 |

IC401 7805 — +9 UNREG — C401 1µF — C402 1µF — C403 .15µF — C404 .15µF — C405 .15µF — C406 150µF — +5

C407 150 — RESET

P401: 7 8 9 10 11 12 13 14 44 25 26 27 28 29 30 31 32 42 — 20 35 34 33

$D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$

R402 220 — C408 560 PF

IC409 LS138: $A_0$ $A_1$ $A_2$ $\overline{CARD}$ — $A_9$ — $\overline{E_0}$ $\overline{E_1}$ $\overline{E_2}$ $\overline{E_3}$ $\overline{E_4}$ $\overline{E_5}$ $\overline{E_6}$

IC402 LS273 — $D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$ $\overline{E_0}$ — 3 4 7 8 13 14 17 18 11 — +5 — 1 — 2 5 6 9 12 15 16 19

IC403 LS273 — $D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$ $\overline{E_1}$ — 3 4 7 8 13 14 17 18 11 — +5 — 1 — 2 5 6 9 12 15 16 19

IC404 LS175 — $D_0$ $D_1$ $D_2$ $D_3$ — $\overline{E_2}$ — 4 5 12 13 — 9 — 1 — 11 14 6 3

IC405 LS273 — $D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$ $\overline{E_3}$ — 3 4 7 8 13 14 17 18 11 — +5 — 1 — 2 5 6 9 12 15 16 19

IC406 LS273 — $D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$ $\overline{E_4}$ — 3 4 7 8 13 14 17 18 11 — +5 — 1 — 2 5 6 9 12 15 16 19

IC407 LS273 — $D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$ $\overline{E_5}$ — 3 4 7 8 13 14 17 18 11 — +5 — 1 — 2 5 6 9 12 15 16 19

IC408 LS273 — $D_0$ $D_1$ $D_2$ $D_3$ $D_4$ $D_5$ $D_6$ $D_7$ $\overline{E_6}$ — 3 4 7 8 13 14 17 18 11 — +5 — 1 — 2 5 6 9 12 15 16 19

IC410 LS02: 8 9 6 5 10 4 2 3 12 13 11

R401 3.3K — +5

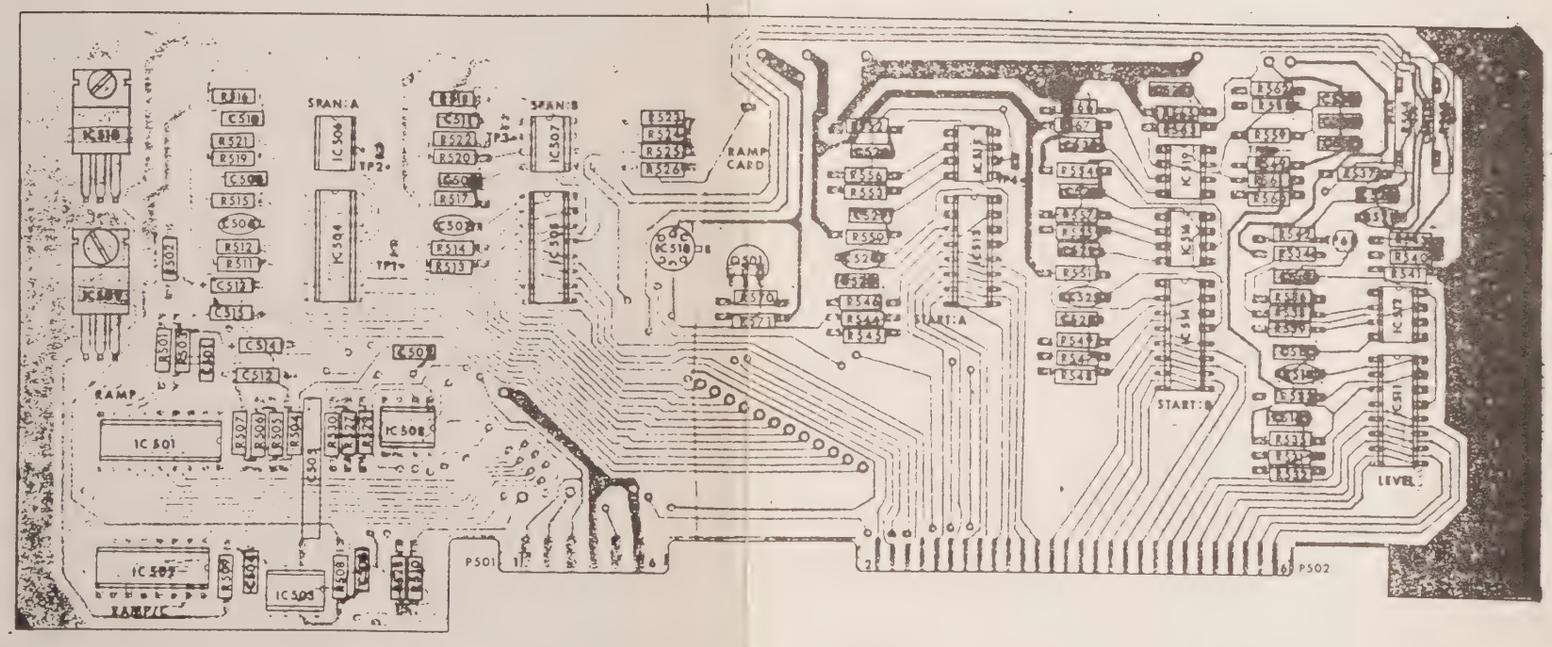
$\overline{RAMP}$ DOWN

BLANKING — $\overline{CW}$ ENABLE — $\overline{RESET}$ — $\overline{RAMP}$ — $\overline{ZERO}$

P402:

| 34 36 38 40 42 44 46 48 | 50 52 54 56 1 3 5 7 | 8 10 6 4 12 | 20 22 24 26 28 30 32 2 | 9 11 13 15 17 19 21 23 | 25 27 29 31 33 35 37 39 | 41 43 45 47 49 51 53 55 |
|---|---|---|---|---|---|---|
| STOP: A | STOP: B | RAMP CTL | RAMP RATE | START: A | START: B | LEVEL |

| REVISIONS | | | |
|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE |




| QTY REQD | CODE IDENT | PART OR IDENTIFYING NO | NOMENCLATURE OR DESCRIPTION |
|---|---|---|---|
| | | | PARTS LIST |

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE
FRACTIONS ± DECIMALS .XX ± .XXX ± ANGLES ±

MATERIAL

FINISH

NEXT ASSY | USED ON

APPLICATION

DO NOT SCALE DRAWING

CONTRACT NO

| APPROVALS | DATE |
|---|---|
| DRAWN W PERSON | 1-12-84 |
| CHECKED | |

WAVETEK

ASSEMBLY DRAWING
1855 RAMP CARD

| SIZE | CODE IDENT NO | DRAWING NO |
|---|---|---|
| D | 34280 | 04125-3000B5 |

SCALE 2:1

1R55
RAMP CARD

REV B

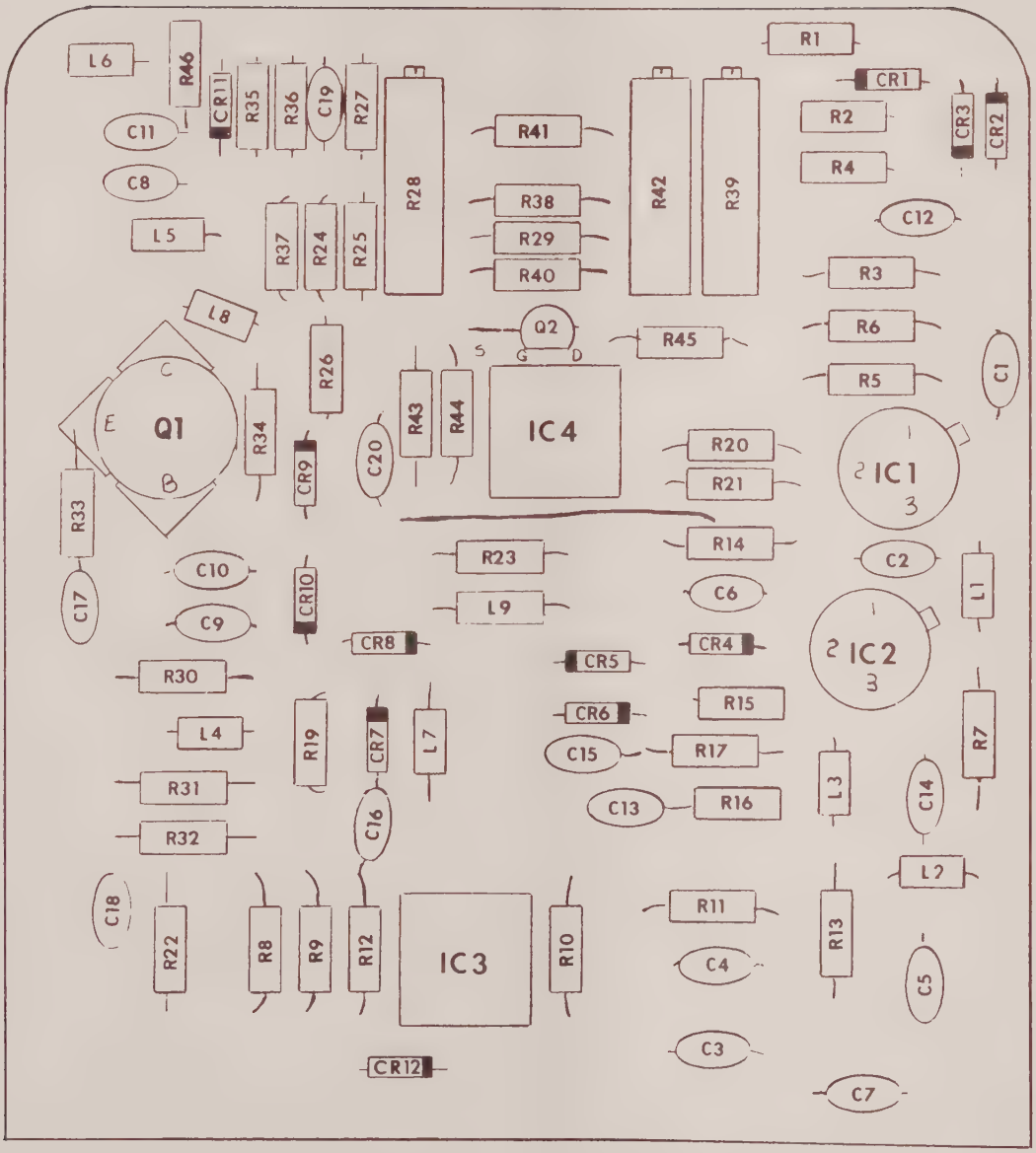
+15A -15A
R508 20 +15
C503 1μF
R509 20 -15
C504 1μF
P502-6
R504 100 -15
C502 1μF
R505 100K
IC502 HI201 RAMP CTL
C505 .22μF -15A
C501 1μF
R501 9.09K
IC501 DAC-76 RAMP RATE
D0 D1 D2 D3 D4 D5 D6
R503 9.1K
R502 200
P502 20 22 24 26 28 30 32
R506 2.26K
R507 2K
P502-2
+15A
P502 4
IC503 LF355
TP-1
R510 10K
P501-4
HORZ OUT
R529 4.7M
R528 10K
+15A
IC508 LM393
R527 10K
R530 100
P501-1
P502-12
IC509 78M15
IC510 79M15
C512 47μF
C513 10μF
P501-2
C514 47μF
C515 10μF
-15 +15
R534 100 +15
R535 100 -15
C517 1μF
C518 .01μF
C519 1μF
C520 1μF
R537 100 +15
R536 6.8K
R538 5.1K
TP-6
R531 1.40K
R532 1.10K
C516 1μF
R533 2.4K
IC511 DAC-08 LEVEL
D0 D1 D2 D3 D4 D5 D6 D7
P502 41 43 45 47 49 51 53 55
IC512A 4558
R542 1K
LEVEL P501-3
C521 .01μF
R539 3K
R540 3.3K
IC512B 4558
R543 20K
TILT INPUT
P501-E
R541 3K
P501-F
+15
IC518 REF-02
-15 +15
R515 100
R516 100
C506 75
R511 4.99K
R512 5.1K
IC504 DAC 08 SPAN A
D0 D1 D2 D3 D4 D5 D6 D7
P502 34 36 38 40 42 44 46 48
R519 5.1K
C510 1μF
R521 4.99K
TP-2
IC506 741
C508 1μF
R525 2.00K
R523 2.00K
R524 12.8K
IC507B 4558
R526 2K
TP-3
R518 20 +15
R517 20 -15
C507 75
R513 4.99K
IC505 DAC-08 SPAN B
D0 D1 D2 D3 D4 D5 D6 D7
P502 50 52 54 56 1 3 5 7
R514 5.1K
R520 510
C509 1μF
C511 1μF
R522 499
IC507A 4558
R562 2.00K
SIZE
R564 2K
R563 3.9K
+15
R565 100
C532 1μF
IC519 741
R566 560
C533 1μF
R567 100
-15
R568 2K
CENTER
C534 1μF
R569 5.1K
-15
P501-C
RAMP TO M9
P501-D
P501-A
RAMP TO REST
P501 B
R552 100 +15
TP-4
R550 100 -15
C524 .01μF
R544 1.40K
R545 1.10K
C522 1μF
R546 2.4K
IC513 DAC-08 START A
D0 D1 D2 D3 D4 D5 D6 D7
P502 9 11 13 15 17 19 21 23
R553 5.1K
C526 1μF
R558 1.00K
R559 1.00K
R556 4.99K
IC515 741
C527 1μF
C530 15μF
R560 1.50K
R561 11.3K
C531 15μF
R554 100 +15
R551 100 -15
C525 .01μF
R547 1.40K
R548 1.10K
C523 1μF
R549 2.4K
IC514 DAC-08 START B
D0 D1 D2 D3 D4 D5 D6 D7
P502 25 27 29 31 33 35 37 39
R555 510
C528 1μF
R557 499
IC516 741
C529 1μF
TP-5
R571 10K
P501-5 CW ENABLE
P502-10
R570 2K
Q501 2N3904
P502-8
P501-6 BLANKING

IP55
RAMP CARD

REV B

+15A -15A
R508 20 +15
C503 1μF
R509 20 -15
C504 1μF
P502-6
R504 100 -15
C502 1μF
R505 100K
IC502 HI201 RAMP CTL
C505 .22μF
R506 2.26K
P502-2
-15A
+15A
P502-4
IC503 LF355
C501 1μF
R501 9.09K
IC501 DAC-76 RAMP RATE
D0 D1 D2 D3 D4 D5 D6
R503 9.1K
R502 200
P502 20 22 24 26 28 30 32
R507 2K
TP-1
R510 10K
P501-4
HORZ OUT
R515 100 -15
R516 100 +15
C506 75
IC504 DAC-08 SPAN A
D0 D1 D2 D3 D4 D5 D6 D7
P502 34 36 38 40 42 44 46 48
R511 4.99K
R512 5.1K
R519 5.1K
C508 1μF
R52 4.99K
IC506 741
TP-2
C510 1μF
R525 2.00K
R523 2.00K
R524 12.8K
IC507B 4558
R526 2K
TP-3
R518 20 +15
R517 20 -15
C507 75
IC505 DAC-08 SPAN B
D0 D1 D2 D3 D4 D5 D6 D7
P502 50 52 54 56 1 3 5 7
R513 4.99K
R514 5.1K
R520 510
C509 1μF
R522 499
IC507A 4558
C511 1μF
R562 2.00K
SIZE
R564 2K
R563 3.9K
R529 4.7M
R528 10K
R527 10K
R530 100
IC508 LM393
P502-12
P501-1
IC509 78M15
IC510 79M15
P501-2
C512 47μF
C513 10μF
C514 .47μF
C515 10μF
+15
-15
R534 100 +15
R535 100 -15
C517 1μF
C518 .01μF
C519 1μF
C520 1μF
R537 100 +15
R536 6.8K
R538 5.1K
TP-6
R531 1.40K
R532 1.10K
C516 1μF
R533 2.4K
IC511 DAC-08 LEVEL
D0 D1 D2 D3 D4 D5 D6 D7
P502 41 43 45 47 49 51 53 55
IC512A 4558
R542 1K
LEVEL P501-3
C521 .01μF
R539 3K
R540 3.3K
R543 20K
TILT INPUT
P501-E
IC512B 4558
R541 3K
P501-F
IC518 REF-02
+15
R552 100 +15
TP-4
R550 100 -15
C524 .01μF
R544 1.40K
R545 1.10K
C522 1μF
R546 2.4K
IC513 DAC-08 START A
D0 D1 D2 D3 D4 D5 D6 D7
P502 9 11 13 15 17 19 21 23
R553 5.1K
R556 4.99K
IC515 741
C527 1μF
C526 1μF
R558 1.00K
R559 1.00K
C530 .15μF
R561 11.3K
R560 1.50K
C531 .15μF
R554 100 +15
R551 100 -15
C525 .01μF
R547 1.40K
R548 1.10K
C523 1μF
R549 2.4K
IC514 DAC-08 START B
D0 D1 D2 D3 D4 D5 D6 D7
P502 25 27 29 31 33 35 37 39
R555 510
R557 499
IC516 741
C529 1μF
C528 1μF
TP-5
IC517B 741
R565 100 +15
C532 1μF
R566 560
C533 1μF
R567 100 -15
R568 2K
CENTER
C534 1μF
R569 5.1K -15
P501-C
RAMP TO M9[illegible]
P501-D
P501-A
RAMP TO REST
P501 B
R571 10K +15
R570 2K
Q501 2N3904
P502-10
P501-5 BW ENABLE
P502-8
P501-6 BLANKING

# M171


L6
R46
CR11
R35
R36
C19
R27
R28
R41
R42
R39
R1
CR1
R2
CR3
CR2
R4
C11
C8
L5
R37
R24
R25
R38
R29
R40
C12
R3
R6
R5
C1
L8
Q1
C
E
B
R26
R34
CR9
C20
R43
R44
Q2
S
G
D
R45
IC4
R20
R21
IC1
1
2
3
R33
C17
C10
C9
CR10
R23
L9
R14
C6
C2
L1
CR8
CR5
CR4
IC2
R30
L4
R19
CR7
L7
CR6
R15
C15
R17
R7
R31
C16
C13
R16
L3
C14
R32
L2
C18
R22
R8
R9
R12
IC3
R10
R11
R13
C4
C5
C3
CR12
C7

M171
SUMMING AMP REV. G

RF IN J3
CR1
CR3
R4 10
R5 10
C1 .022μF
R1 560
CR2
R6 330
R2 330
C12 200
R3 1K
IC1 MWA120
C2 .022μF
C3 .022μF
-18
L1 10T
R7 27
C5 .022μF
IC2 MWA120
10T L2
C7 1μF
C6 .022μF
10T L3
R13 18
R14 2K
CR4
CR5
C13 360
R15 68
CR6
R16 5.1K
R17 5.1K
C15 .1μF
C14 47
R18 2.7
C17 .1μF
C18 1μF
10T L4
C10 .022μF
C9 .022μF
Q2 2N5461
R44 10K
+18
R43 1K
R45 1M
C20 1K
IC3B TL082CP
R11 100
R8 91K
C4 .022μF
R9 5.1K
R21 24K
IC3A TL082CP
R12 100
R10 15K
R22 1.5K
CR12
IC4B TL082CP
R41 75K
R42 20K MIN.
R40 4.7K
R38 12K
R39 20K MAX.
R37 1K
C23 6.8 10 LEVEL CONTROL
C19 470
R47 200K
R32 1.2K
R31 1.2K
C8 .022μF
L5 10T
R35 68
R36 6.2K
CR11
R33 15
Q1 BFR94
3½T L8
C11 .022μF
R46 68
J1 RF OUT
R34 270
L6 10T
CR7
CR8
R30 2K
R19 470
L7 39
C16 47
R20 5.1K
CR10
J2 PSK IN
R27 15
CR9
R26 43
R25 43
R28 500 LEVEL
R23 1.5K
IC4A TL082CP
R24 39
R29 120
C21 1000
C22 1000
C25 6.8
C24 6.8
-18
+18
M113 BLANKING
μP BLANKING

OSCILLATOR-MIXER
M9L-1

REV D

MIXER

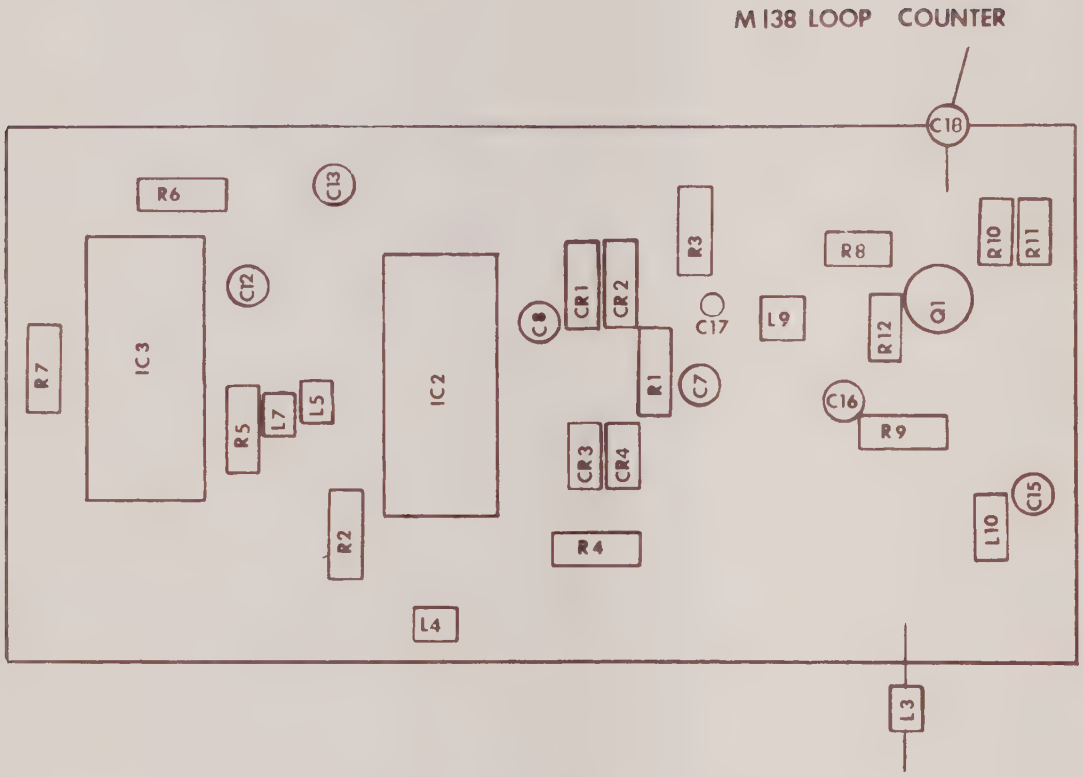
CW

RF OUTPUT

SWEEP SAMPLE OUTPUT

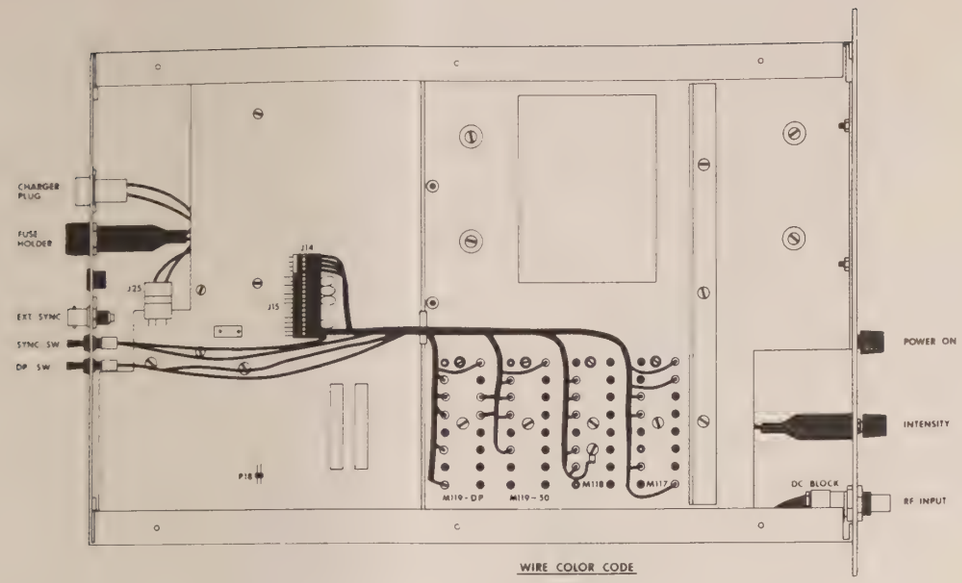
+18 35mA

-18 35mA


M138 LOOP COUNTER
C18
R6
C13
R3
R8
R10
R11
C12
IC3
IC2
CR1
CR2
C8
C17
L9
Q1
R12
R7
R1
C7
C16
R9
R5
L7
L5
CR3
CR4
C15
L10
R2
R4
L4
L3

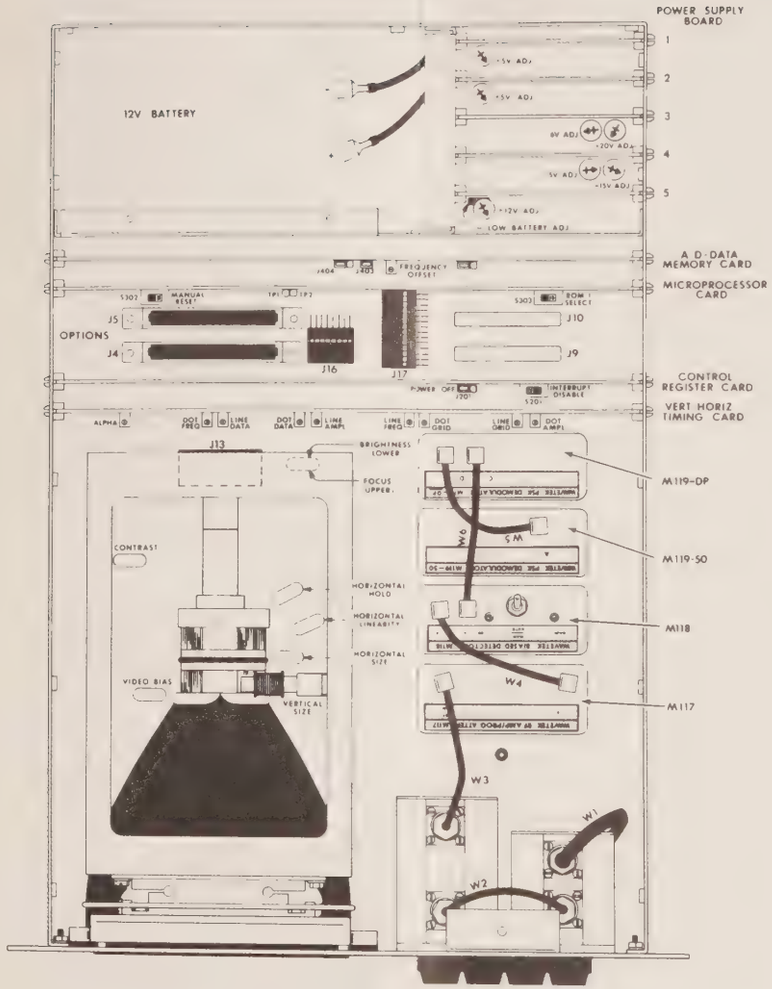
LOOP COUNTER
M138
REV B

+5V
C1
1000
2
+7.3V
C2
1000
1
+18V
C5
1000
3
L1
10T
C3
1µF
IC1
7805
L2
10T
C4
100µF
L3
10T
L4
4T
L5
4T
R2
5.1K
R7
110
C14
6.8
8
L6
10T
R1
1.2K
L10
10T
C6
1µF
CR1
C8
.01µF
CR2
CR3
CR4
C15
1µF
R9
1K
L9
6T
C16
.01µF
R8
240
R12
20K
C17
.15µF
C7
.01µF
RF
IN
J2
C18
.15µF
Q1
2N5179
R10
33
R11
33
R4
1.2K
L8
10T
C11
1µF
C10
1000
4
-18V
IC2
SP8680
IC3
74S169
L7
4T
C9
1µF
R6
3K
R5
3K
C12
1µF
C13
1µF




WIRE COLOR CODE

GREEN +5V
ORANGE +15V
YELLOW -15V



MODEL 1865
WIRING DIAGRAM REV. B

1dB/STEP ATTENUATOR
0dB
1dB
2dB
3dB
4dB
5dB
6dB
7dB
8dB
9dB
10dB
BLANK

10dB/STEP ATTENUATOR
0dB
10dB
20dB
30dB
40dB
50dB
60dB
70dB

ATTENUATOR SWITCHES MOUNTED ON REAR OF ATTENUATORS

KEYBOARD
J24
NC
M1 / M2
DOT / LINE
RUN / HOLD
LEVEL / FREQ
PEAK / VALLEY
STORE
A-B / AB
AVG
EXT OPT

RF IN
W1
0-10dB ATTENUATOR (1dB STEPS)
W2
0-70dB ATTENUATOR (10dB STEPS)
W3

M119-DP OPT DP PSK DEMOD
M119-50 PSK DEMOD
W6
W5
W4
PSK RF
S5
M118 BIASED DETECTOR
TAP OUT
RF IN
DETECTED OUT VIDEO / HOLD PULSE
M117 RF AMP/ PROG ATTEN
RF OUT
RF IN
R75 250K
INTENSITY

CRT
J13
GND
REMOTE BRIGHTNESS
FILAMENT
VERT. SYNC IN
+12 IN
VIDEO
HORIZ SYNC IN
GND

MOTHER BOARD
J17 1,2,3,4,5,6,7,8,9,10,11,12,13,14

A/D-DATA MEMORY CARD
SYNC IN
TO P12-4
CARD READER AND LOW BATT
VAR CLK
μP 1ST PASS
DATA MEM
MRD
PASS 2
TEST
FROM P12-F
TO P15 14 SYNC IN
TO P14-17 ANALOG DATA IN
TO P14-18 INPUT ENABLE
-6 SWITCHED -6
-15 SWITCHED -15
+5 SWITCHED +15
+5A SWITCHED +5
+5 FROM P7-7
INHIBIT TO J22-C
LOW BATT. TO J19-K
TO P7-25
CARD READER AND LOW BATT. TO J19-L
FROM P7-3
GND
GND
J12
J7

μPROCESSOR CARD
CLK 1.79 MHZ
μP SW6
μP SW7
μP SW8
DATA MEM
MRD
SYNC IN
J11
J6
DMA OUT
INT
SYNC IN

CONTROL REGISTER CARD
CARD READER
VOLT METER
POWER OFF
CARD READER AND LOW BATT
VAR. CLK.
FROM P8-1
μP 1ST PASS
INT
DMA OUT
FROM P8-5
J8

VERT/HORIZ TIMING CARD
ALPHA CHARACTER 7.168 MHZ
HORIZ RETRACE
VERT SYNC OUT
CLK 1.79 MHZ
DATA LOAD
LINE DATA
DOT DATA
LINE/DOT MODE
CURSOR 1 AMP/FREQ
CURSOR 2 AMP/FREQ
FROM P2-47 20dB
FROM P2-25 10dB
FROM P2-50 0dB
3.58 MHZ
VERT. SYNC. OUT
VIDEO
HORIZ. RETRACE
ALPHA CHARACTER 1
ALPHA CHARACTER 2
CURSOR 1
CURSOR 2
M.S.B
L.S.B
TO P1-5
TO P1-4
TO P1-6
J3
J2

NOTE: INDICATES SIGNAL ORIGIN

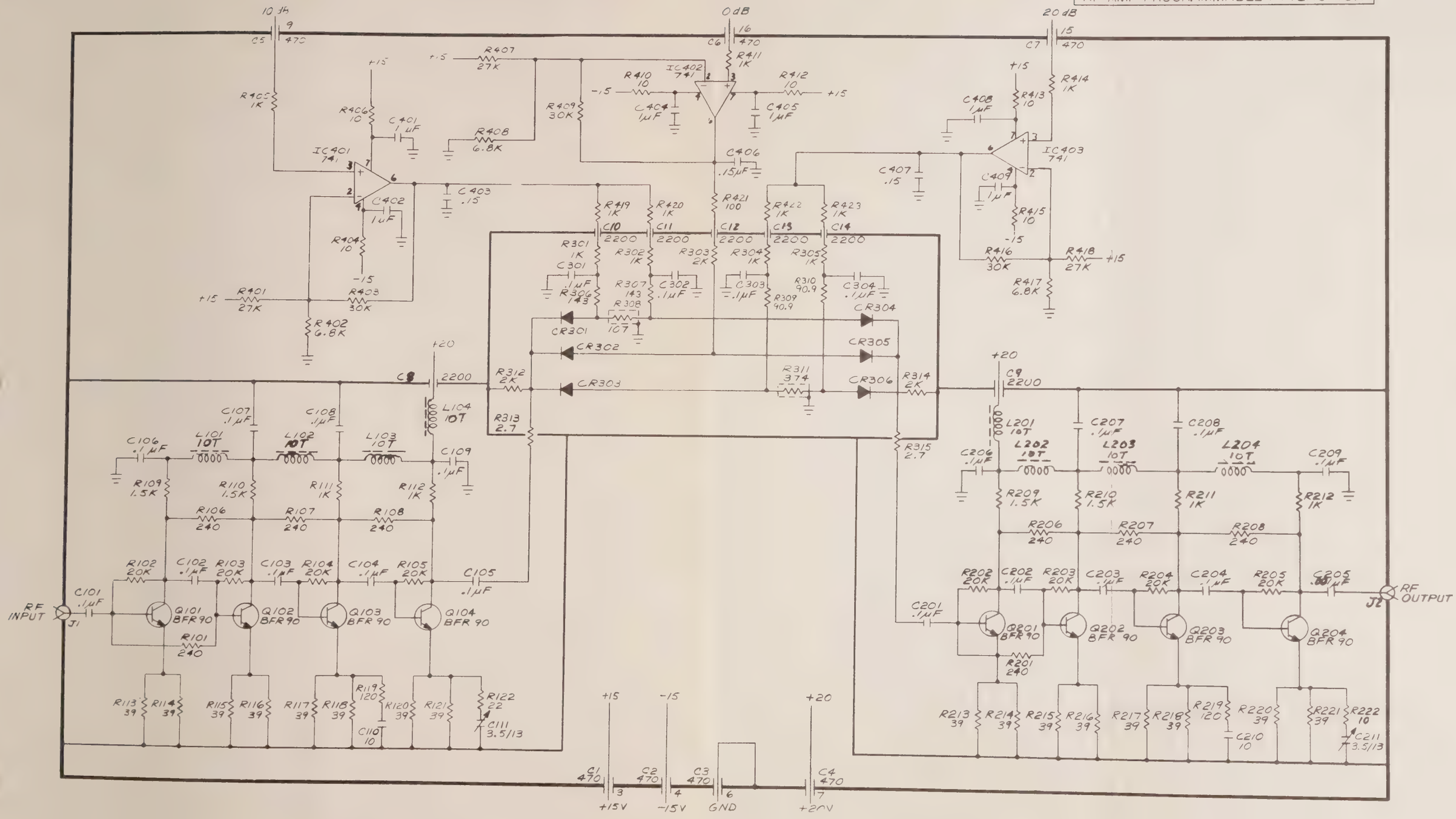
J3-J7
1 CARD READER
2 μP SW6
3 CR + LB
4 DMA OUT
5 VOLTMETER
6 INT
7 POWER OFF
8 MRD
9 TP_A
10 MWR
11 N_0
12 Q
13 N_1
14 EF_3
15 N_2
16 EF_4
17 SC_0
18 μP SW8
19 SC_1
20 DATA MEM
21 TP_B
22 μP 1ST PASS
23 μP SW7
24 MA_0
25 EF_4
26 MA_1
27
28 MA_2
29 DB_7
30 MA_3
31 DB_6
32 MA_4
33 DB_5
34 MA_5
35 DB_4
36 DB_4
37 DB_3
38 MA_7
39 DB_2
40 +5
41 DB_1
42 +5
43 DB_0
44 VAR. CLK
45 EF_3
46 SYNC IN
47 GND
48 GND
49 1.79 MHZ
50 RAM 1

POWER ON
NO
COM
NC
+12V BATTERY
CHARGER
SYNC SW
EXT. SYNC. IN RF
F1 4AT
RP
P18
J25
J15
J14
J16
TO J12-3
TO J12-6
TO J12-M

P.S. BOARD 1
P.S. BOARD 2
P.S. BOARD 3
P.S. BOARD 4
P.S. BOARD 5
INHIBIT
+12 IN
+5
+5A
+20
-6
-15
+12 CRT
+12 CARD READER
J23
J22
J21
J20
J19
L16
L13
L9
L6
L3
INHIBIT FROM J12-4
C13
C1-C13 .1μF TYP
L14
L15
L12
L11
L10
L8
L7
L5
L2
L1
L4
C11
C12
C9
C8
C10
C6
C7
C5
C2
C1
C4
C3
(FROM J12-E) CARD READER AND LOW BATTERY
(FROM J12-F) LOW BATTERY

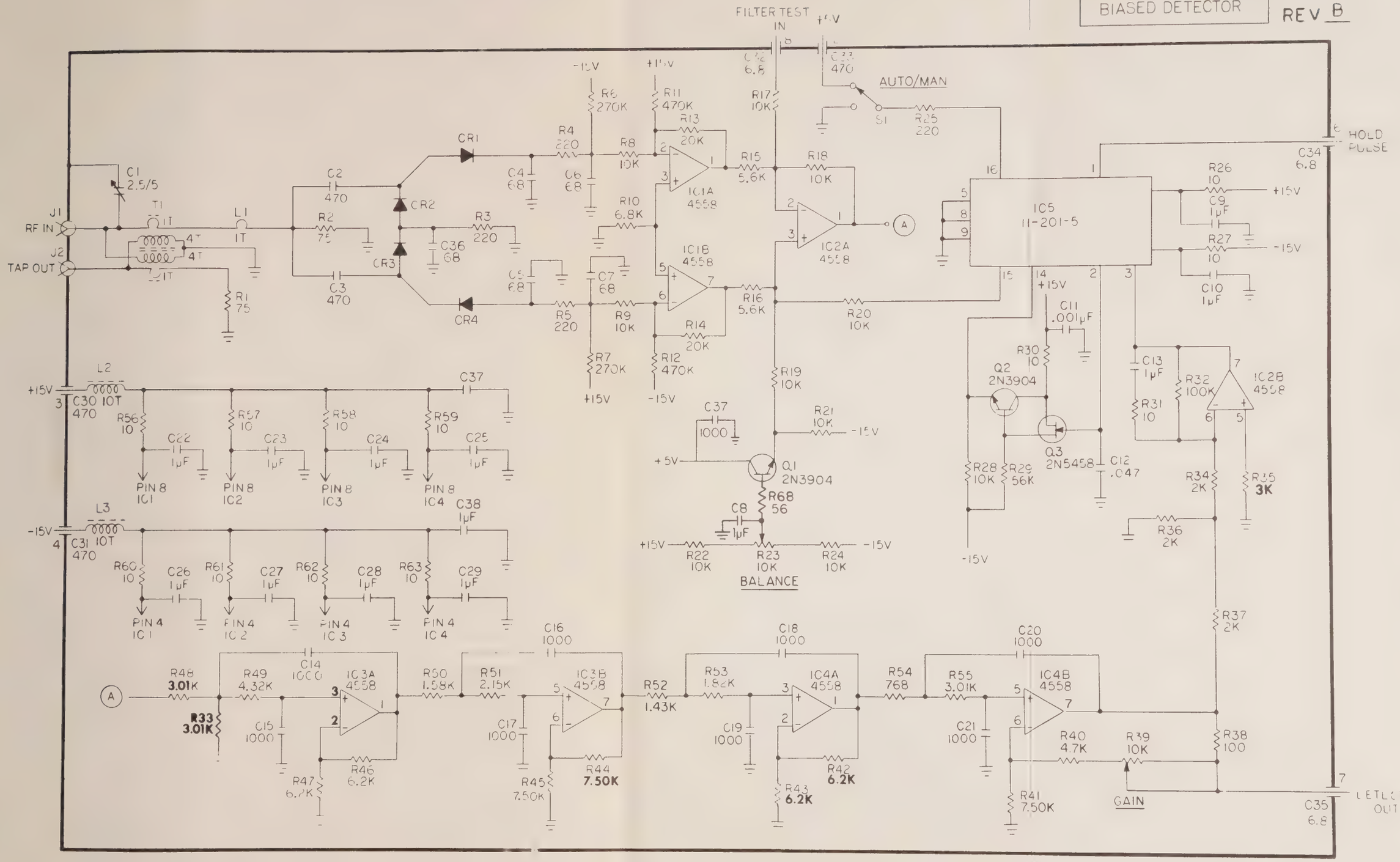
+5 TO J12-5
+5 TO J1-2,8
+5A TO J12-M
-6 TO J12-M
+15 TO J12-K
-15 TO J12-L

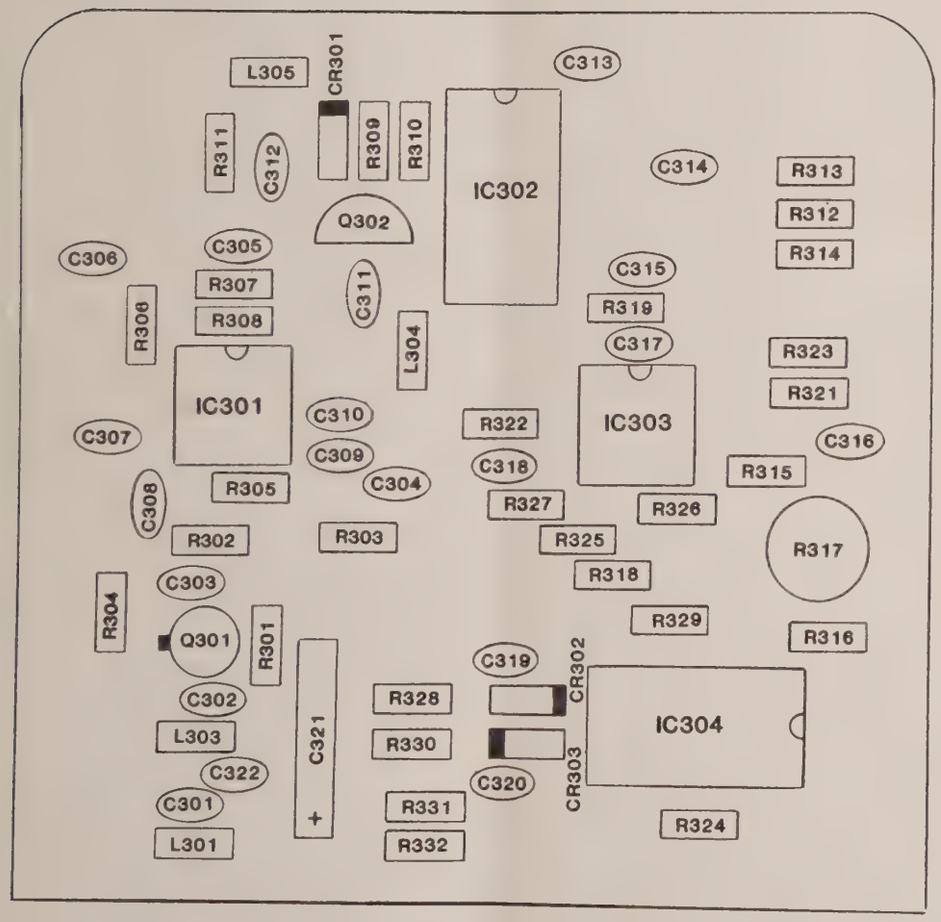
# M117
# RF AMP PROGRAMMABLE ATTENUATOR

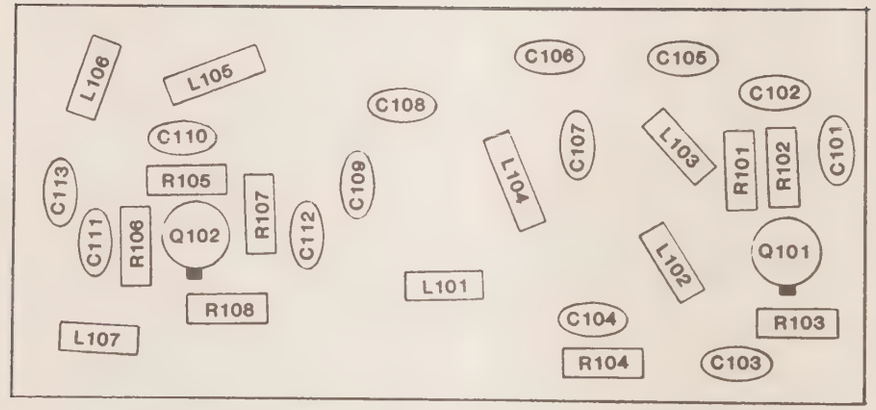


MII8
BIASED DETECTOR

REV B





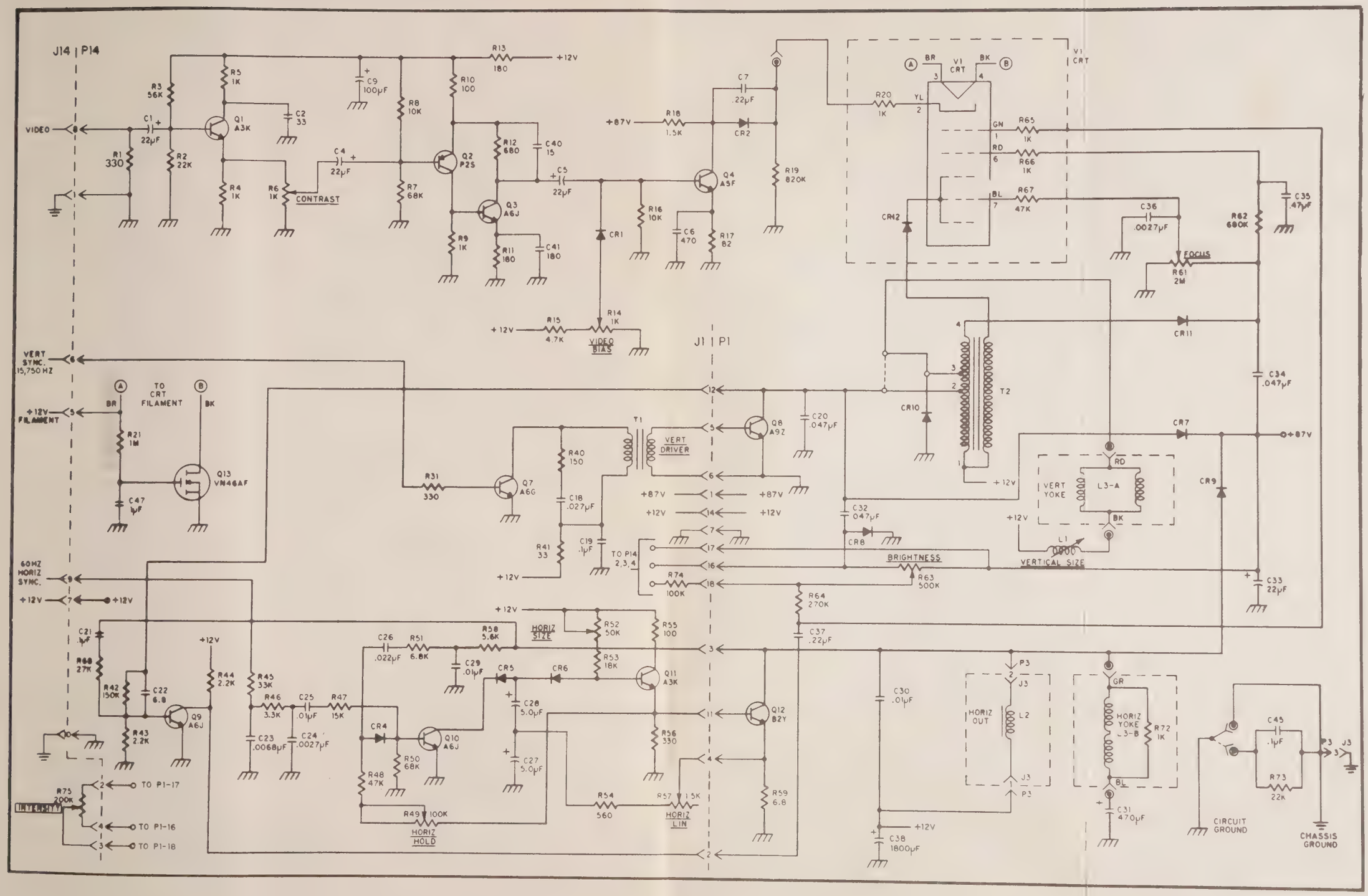

NOTE: C102 AND R101 ARE NOT USED ON M119-155

M119-50
PSK DEMODULATOR REV B

PSK INPUT J1
C101 470
C102 .001μF
R101 6.8K
R102 20K
Q101 2N5053
R103 10
L102 9 T
C103 .01μF
R104 1K
C104 1μF
L101 10 T
+15A
C106 .47
L103 6 T
C105 25
C107 20
C108 .47
L104 16 T
C109 15
L105 19 T
L106 2 T
C111 .001μF
R105 240
R106 20K
C110 470
Q102 2N5053
R107 10
R108 1K
+15
C1 2200
L107 10 T
L1 10 T
C112 1μF
C113 470
C203 .001μF
R201 9.1K
R209 1.8K
Q201 2N5053
C210 1μF
C205 .001μF
C206 15
C208 5
C209 10
CR201
L203 16 T
L204 3 T
R205 20K
C4-5 4.7 TYP
R207 27
R206 470
R208 470
MX1
L301 6.8
C301 250
L303 6.8
C302 250
L302 3.9
R202 5.1K
R203 330
R204 47
C202 .001μF
C207 47
C204 .15μF
L202 10 T
C201 1μF
L201 10 T
C3 2200
L3 10 T
C2 2200
L2 10 T
-15
R323 20K
R324 20K
R1 10K
R321 4.99K
C316 1μF
IC304 MC4011B
R329 20K
R328 100K
C318 1μF
R325 10
R322 100K
CR302
C319 .001μF
IC303B
NE5530
C317 .15μF
IC303A
NE5530
R314 1.00K
R312 1.00K
R313 2.7
C314 270
C315 1μF
CR303
C320 .001μF
R326 11.3K
R331 20K
R330 100K
R327 1.5K
R332 1K
C321 10μF
R319 10
R315 1K
R318 27K
R317 2K
R316 2K
+15
+5
-15
C304 1μF
L304 10 T
C305 1μF
R303 1K
R307 200
C303 .001μF
C306 .15μF
R306 100
R302 20K
C307 1μF
C308 .15μF
R301 1K
IC301 MC1350P
R308 470
Q301 2N5053
R304 10
R305 5.6K
C309-310 .15 TYP
C312 1μF
C311 .01μF
C313 1μF
L305 10 T
R311 10
2N3906
Q302
R309 20K
CR301
IC302 11C44 Φ DETECTOR
R310 180
C13 10μF
L4 47
CR1
CR2
C9 1000
C10 1000
C11 1000
C8 6.8
C6 6.8
C7 6.8
Φ LOCK OUTPUT
DEMOD OUT
3.58 MHZ REF

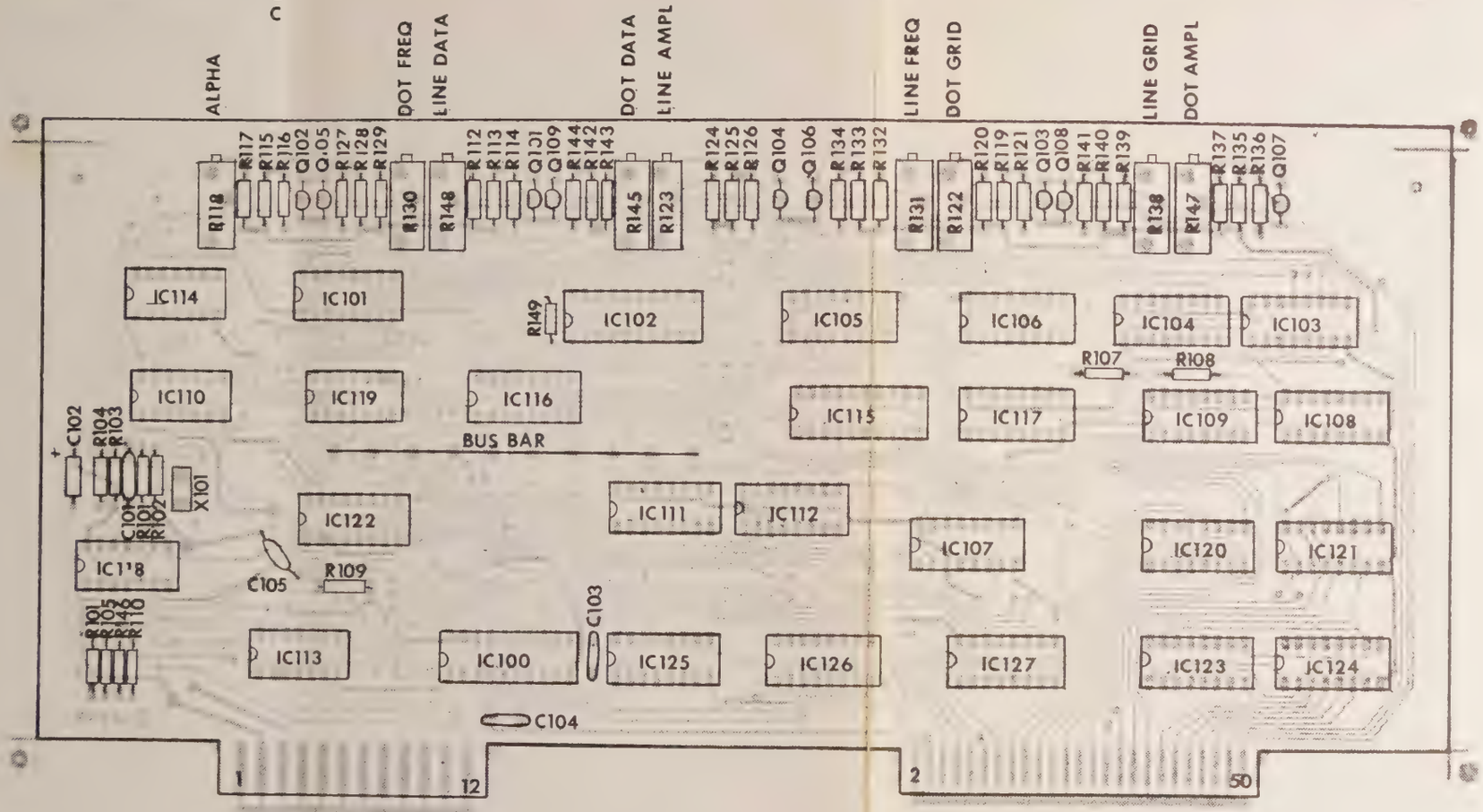
| M119-43 | |
|---|---|
| L103 | 7T |
| L203 | .68μH |
| L204 | 4T |
| C105 | 36pF |
| C107 | 30pF |
| C109 | 22pF |
| C208 | 3pF |
| C209 | 3.5/13pF |

MODEL 1865
CRT ASSEMBLY
REV B



| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
| | A | D-056 | 6-27-83 | |

ALL TRANSISTORS: E B C




| | |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| NEXT ASSY | USED ON |
| APPLICATION | |

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS DECIMALS ANGLES
± .XX ± ±
.XXX ±

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

| APPROVALS | DATE |
|---|---|
| DRAWN BOB ABLEL | |
| CHECKED | |
| | |
| | |

REDRAWN
TJM 6-27-83

WAVETEK INDIANA, INC.

# TIMING CARD

| SIZE | CODE IDENT NO. | DRAWING NO. |
|---|---|---|
| B | 34280 | 0412-10-0002 |

SCALE | SHEET OF

TELEDYNE POST N28549

CATV SWEEP RECOVERY SYSTEM
MODEL 1865
VERT/HORIZ TIMING CARD
REV C

ALPHA-NUMERIC

Q101-Q109 2N3906

LINE DATA
DOT GRID
LINE AMPL
DOT FREQ
CURSOR 2 DATA
CURSOR 1 DATA
GRID
LINE FREQ
DOT AMPL
LINE GRID
DOT DATA

P2-11 LINE DATA
P2-13 DOT DATA
P2-29 CURSOR 1 CONTROL
P2-31 CURSOR 2 CONTROL
P2-49 LINE/DOT MODE

VIDEO P1-L

P1-5 ↔ P2-47
P1-4 ↔ P2-45
P1-6 ↔ P2-50

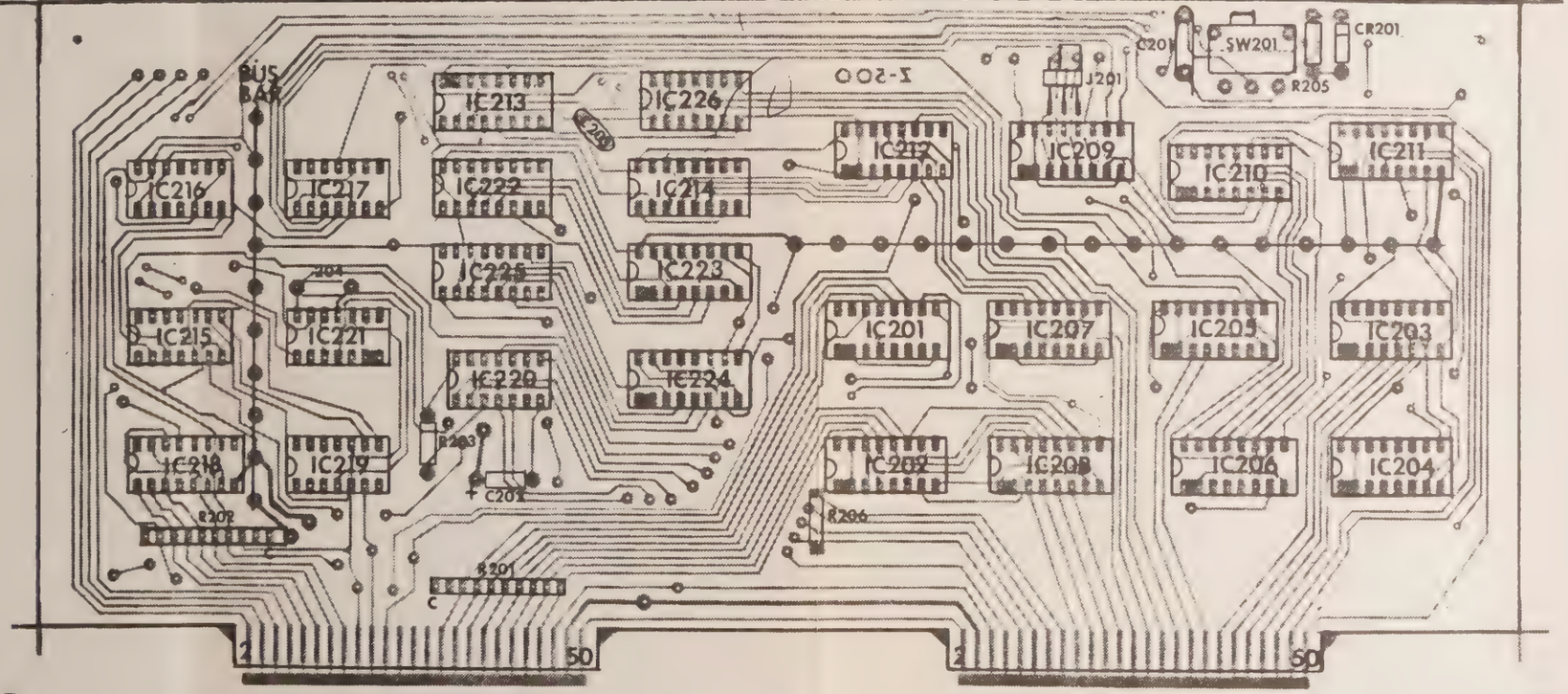
ALPHA-CHARACTER
VERT SYNC OUT
DATA LOAD
1ST ALPHA CHARACTER
GRID
HORZ RETRACE
CURSOR 2 AMP/FREQ
CURSOR 2
CURSOR 1
CURSOR 1 AMP/FREQ
CLK

P2-7 P2-2 P2-1 P2-46 P1-2,B P1-3,C P1-N P2-6 P2-48 P2-15 P1-12 P1-9 P2-31 P2-29 P2-30 P2-17 P2-32 P2-9 P2-34 P2-2 P2-36 P2-23 P2-33 P2-27 P2-35 P2-25 P2-9 P2-5

P2-44 P2-42 P2-40 P2-38 P2-43 P2-4 P2-39 P2-37 P2-20 P2-18 P2-6 P2-4 P2-28 P2-26 P2-24 P2-22

| POWER CHART | | +5V | GND |
|---|---|---|---|
| IC- | DEVICE | | |
| 101,103,104,107 | MC74HC161AN | 16 | 8 |
| 123,124,126,127 | " | 16 | 8 |
| 102,115 | 74S472 | 20 | 0 |
| 105,106 | MC74HC175N | 16 | 8 |
| 114 | MC74HC00 | 14 | 7 |
| 110 | CD4008B | 4 | 7 |
| 108,109,111,112 | MC74HC161AN | 16 | 8 |
| 116 | | | |
| 113 | 74S05 | 4 | 7 |
| 120 | 74S472 | 20 | 10 |
| 117 | MC74HC151 | 16 | 8 |
| 119 | CD4011B | 14 | 7 |
| 118 | 7400 | 14 | 7 |
| 120,121,122,125 | MC74HC157N | 16 | 8 |

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
| | | | | |




| | | | | |
|---|---|---|---|---|
| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES ± .XX ± ± .XXX ± | CONTRACT NO. | WAVETEK INDIANA, INC. |
| | | | APPROVALS / DATE | CONTROL REGISTER CARD PARTS LAYOUT |
| | | | DRAWN DW | |
| | | MATERIAL | CHECKED | |
| | | FINISH | REDRAWN TJM 6/28/83 | SIZE B / CODE IDENT NO 34280 / DRAWING NO. 0412-10-0004 |
| NEXT ASSY | USED ON | | | SCALE / SHEET OF |
| APPLICATION | | DO NOT SCALE DRAWING | | |

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# CONTROL REGISTER CARD
# MODEL 1865
# CATV SWEEP RECOVERY SYSTEM

REV. B

CURSOR 1

CURSOR 2

ALPHA-CHARACTER 1

ALPHA-CHARACTER 2

P8-28 P8-26 P8-24 P8-22

P8-20 P8-18 P8-16 P8-14

P8-43 P8-41 P8-39 P8-37

P8-44 P8-42 P8-40 P8-38

P8-35 P8-33

P8-36 P8-34 P8-32 P8-30

P8-25 P8-27

P8-23 P8-21 P8-19 P8-17

P3-1 CARD READER
P3-3 CARD READER AND LOW BATTERY
P3-5 VOLTMETER

P3-7 POWER OFF

P8-49 LINE/DOT MODE
P8-31 AMP/FREQ. CURSOR 2
P8-29 AMP/FREQ CURSOR 1

P3-22 1st PASS
P8-50 0 dB
P8-45 10 dB
P8-47 20 dB

VARIABLE CLOCK P3-44

CLK P8-46

R201A-I 47CK TYP. TPB

P3-21 P3-29 P3-31 P3-33 P3-35 P3-37 P3-39 P3-41 P3-43

P3-24 $MA_0$

R202A-B 470K

P3-8 $\overline{MR5}$ TYP.

P3-47 P3-48 P3-9 P3-5 P3-3 P3-1 P8-3 P8-4

R202C-F $T_{PA}$ $N_2$ $N_1$ $N_0$

+5

P3-19 SI R202G-H

P3-17 SO

P3-6 $\overline{INT}$

P8-9 P8-7 ALPHA-CHAR

P8-15

R206 470K

R203 10K

C210-4

P3-45 HORZ. RETRACE

P3-4 $\overline{DMA\ OUT}$

C216-4

R204 10K

P8-5 P8-6 $\overline{DMA\ OUT}$

P8-13 $\overline{DOT\ DATA}$

$\overline{DATA\ LOAD}$

C203 250

$\overline{LINE\ DATA}$ P8-11

$\overline{DATA\ LOAD}$ P8-48

HORZ. RETRACE P8-5 P3-45

CLK P8-46

P8-1 ⟷ P3-49

+5V → P3-40,42

C202 10μF 25V

C201 1μF

R205 100K

CR201 1N914

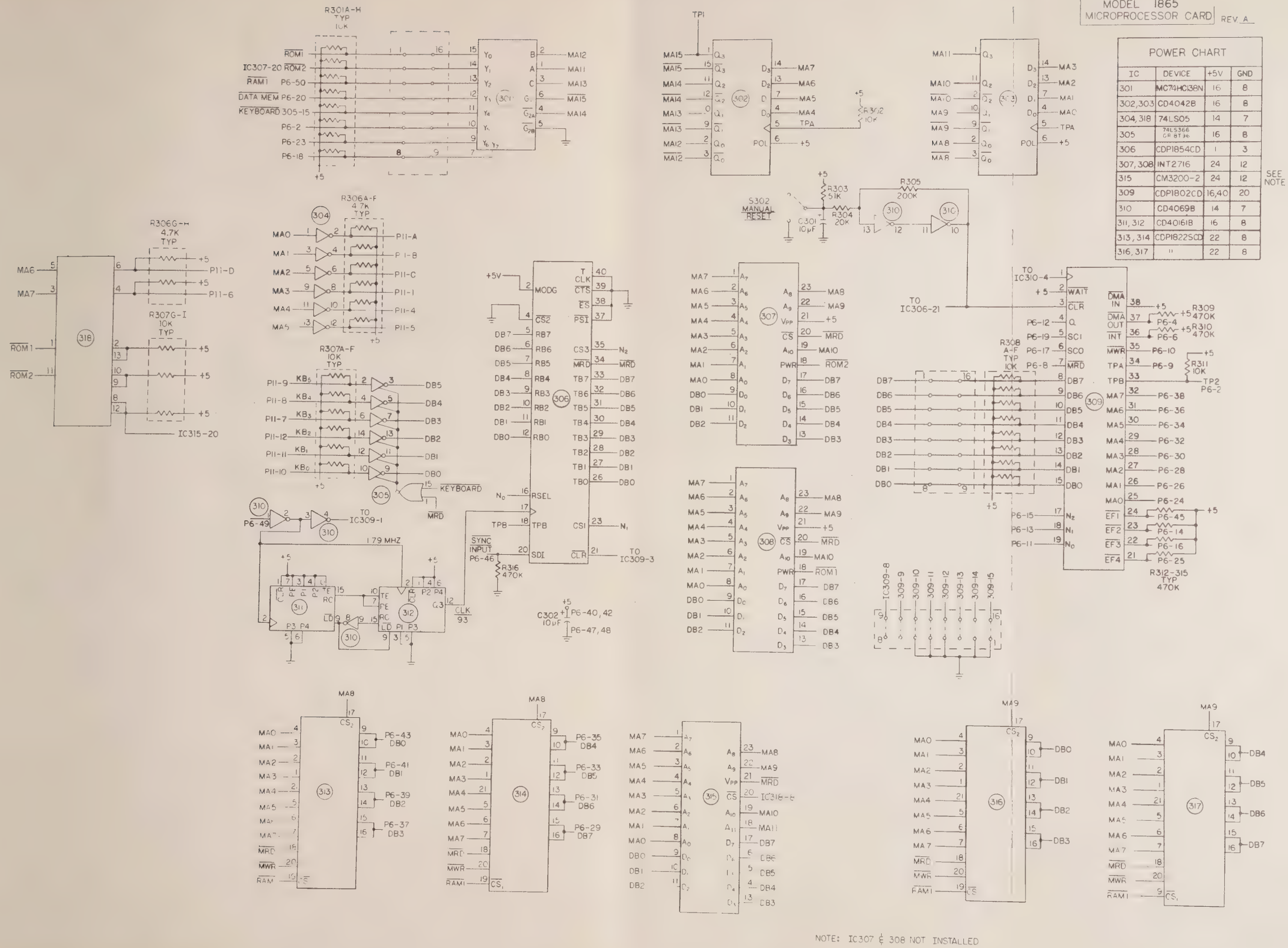
| POWER CHART | | | |
|---|---|---|---|
| C- | DEVICE | +5V | GND |
| 201, 202, 203, | CD4076B | 16 | 8 |
| 204 205, 206, | " | 16 | 8 |
| 207 208, 209, | " | 16 | 8 |
| 210 211 212, | " | 16 | 8 |
| 223, 224 | " | 16 | 8 |
| 213 | MC74HC109 | 16 | 8 |
| 214 | MC74HC16. | 16 | 8 |
| 215 | MC14069UB | 14 | 7 |
| 216, 217 | CD4011B | 14 | 7 |
| 218 | CDP1853CD | 16 | 8 |
| 219 | CD4081B | 14 | 7 |
| 220 | MC74HC00 | 14 | 7 |
| 221 | CD4013B | 14 | 7 |
| 222, 225 | 74LS169 | 16 | 8 |
| 226 | MC74HC04 | 14 | 7 |

NOTE: IC307 & 308 NOT INSTALLED
WHEN IC315 IS USED.

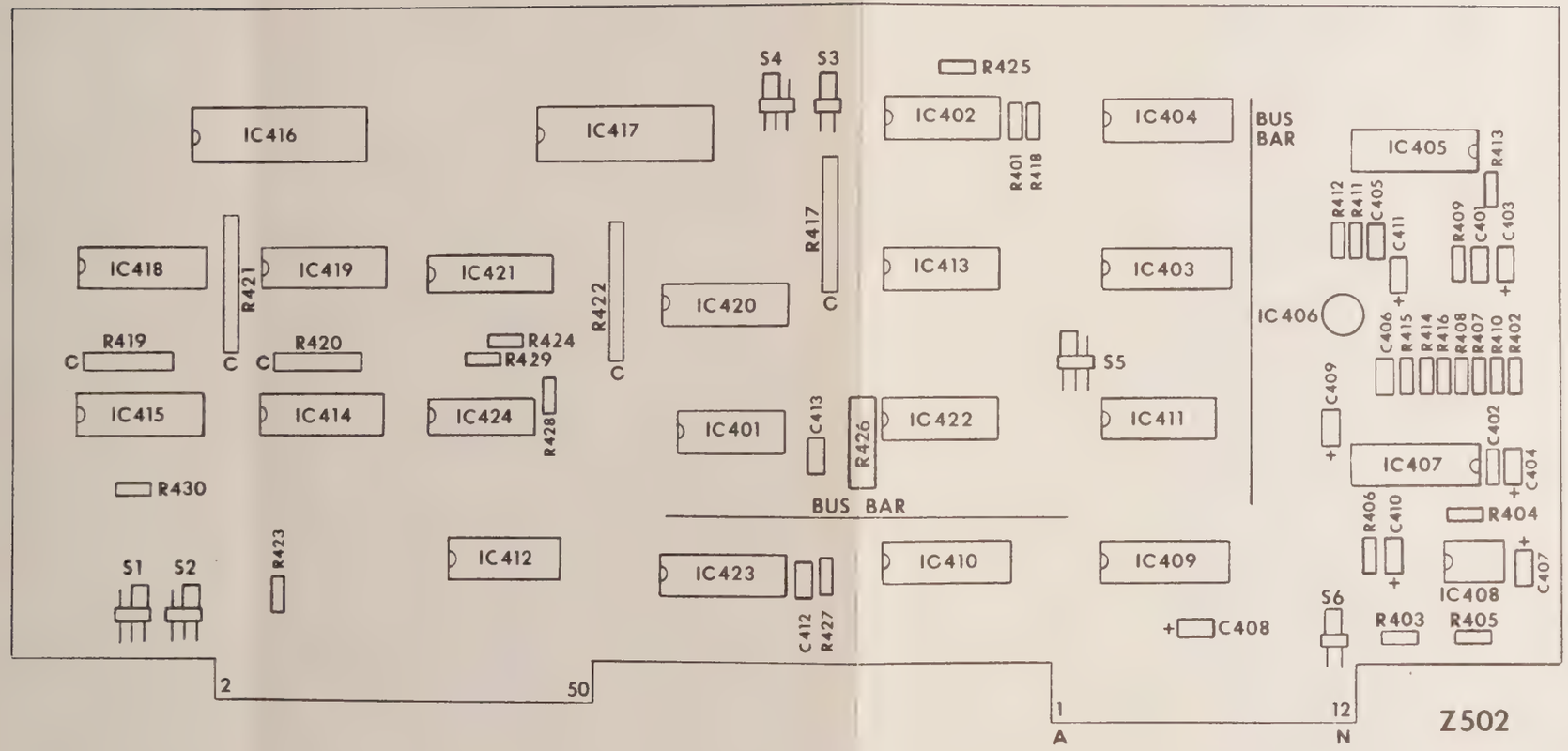
MODEL 1865
MICROPROCESSOR CARD REV A

| POWER CHART | | | |
|---|---|---|---|
| IC | DEVICE | +5V | GND |
| 301 | MC74HC138N | 16 | 8 |
| 302,303 | CD4042B | 16 | 8 |
| 304, 318 | 74LS05 | 14 | 7 |
| 305 | 74LS366 OR 8T96 | 16 | 8 |
| 306 | CDP1854CD | 1 | 3 |
| 307, 308 | INT2716 | 24 | 12 |
| 315 | CM3200-2 | 24 | 12 |
| 309 | CDP1802CD | 16,40 | 20 |
| 310 | CD4069B | 14 | 7 |
| 311, 312 | CD4016B | 16 | 8 |
| 313, 314 | CDP1822SCD | 22 | 8 |
| 316, 317 | " | 22 | 8 |

SEE NOTE




NOTE: IC307 & 308 NOT INSTALLED WHEN IC315 IS USED.

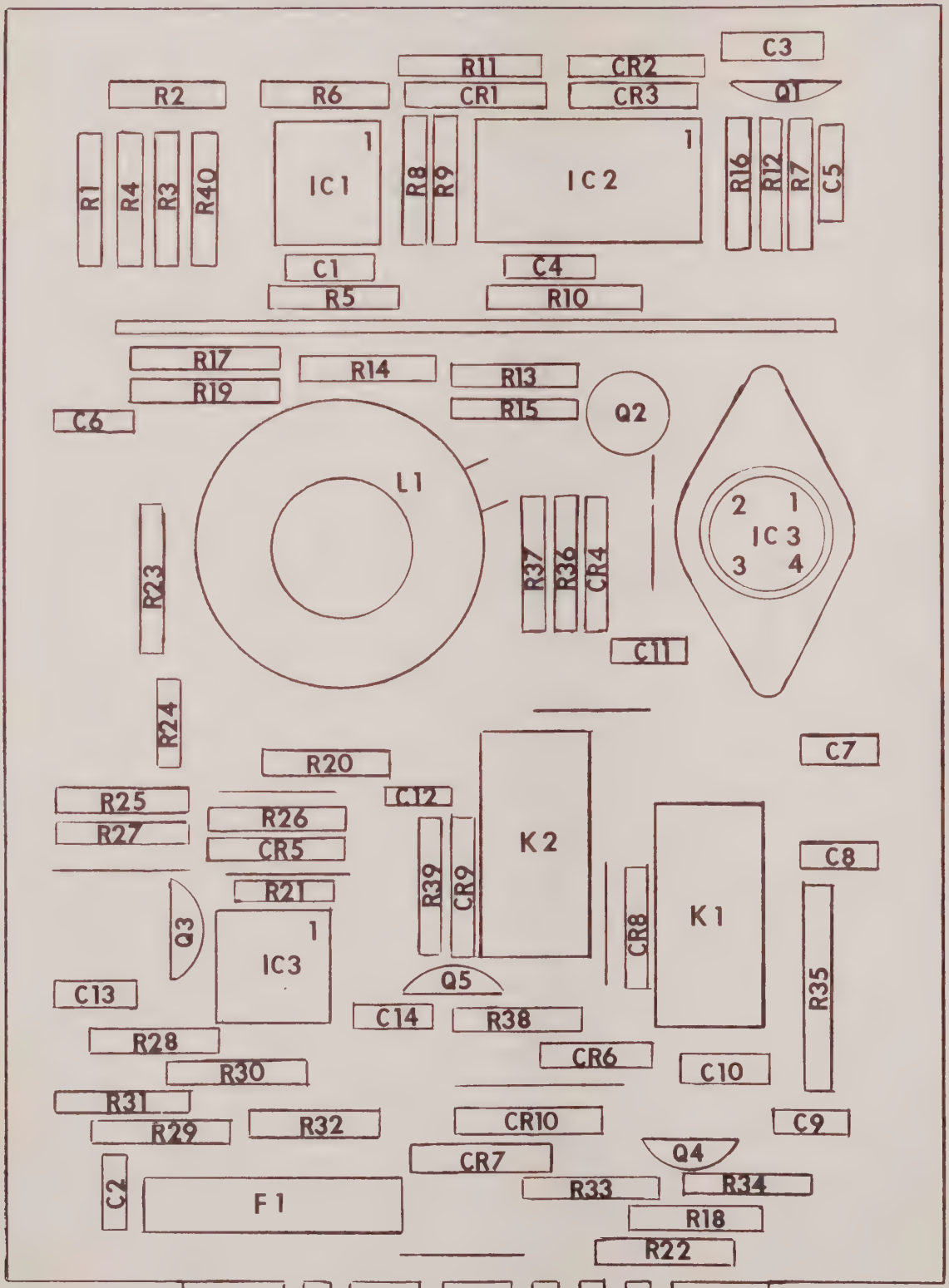

S4
S3
R425
IC416
IC417
IC402
IC404
BUS BAR
IC405
R401
R418
R412
R411
C405
C411
R409
C401
R413
C403
IC418
R421
IC419
IC421
R422
R417
IC420
IC413
IC403
IC406
R419
R420
R424
R429
S5
C406
R415
R414
R416
R408
R407
R410
R402
C409
IC415
IC414
IC424
R428
IC401
C413
R426
IC422
IC411
IC407
C402
C404
R430
BUS BAR
R406
C410
R404
S1
S2
R423
IC412
IC423
IC410
IC409
IC408
C407
S6
R403
R405
C412
R427
+C408
2
50
1
12
A
N
Z502

CATV SWEEP RECOVERY SYSTEM
MODEL 1865 RECEIVER
A/D-DATA MEMORY CARD
REV. _

POWER CHART

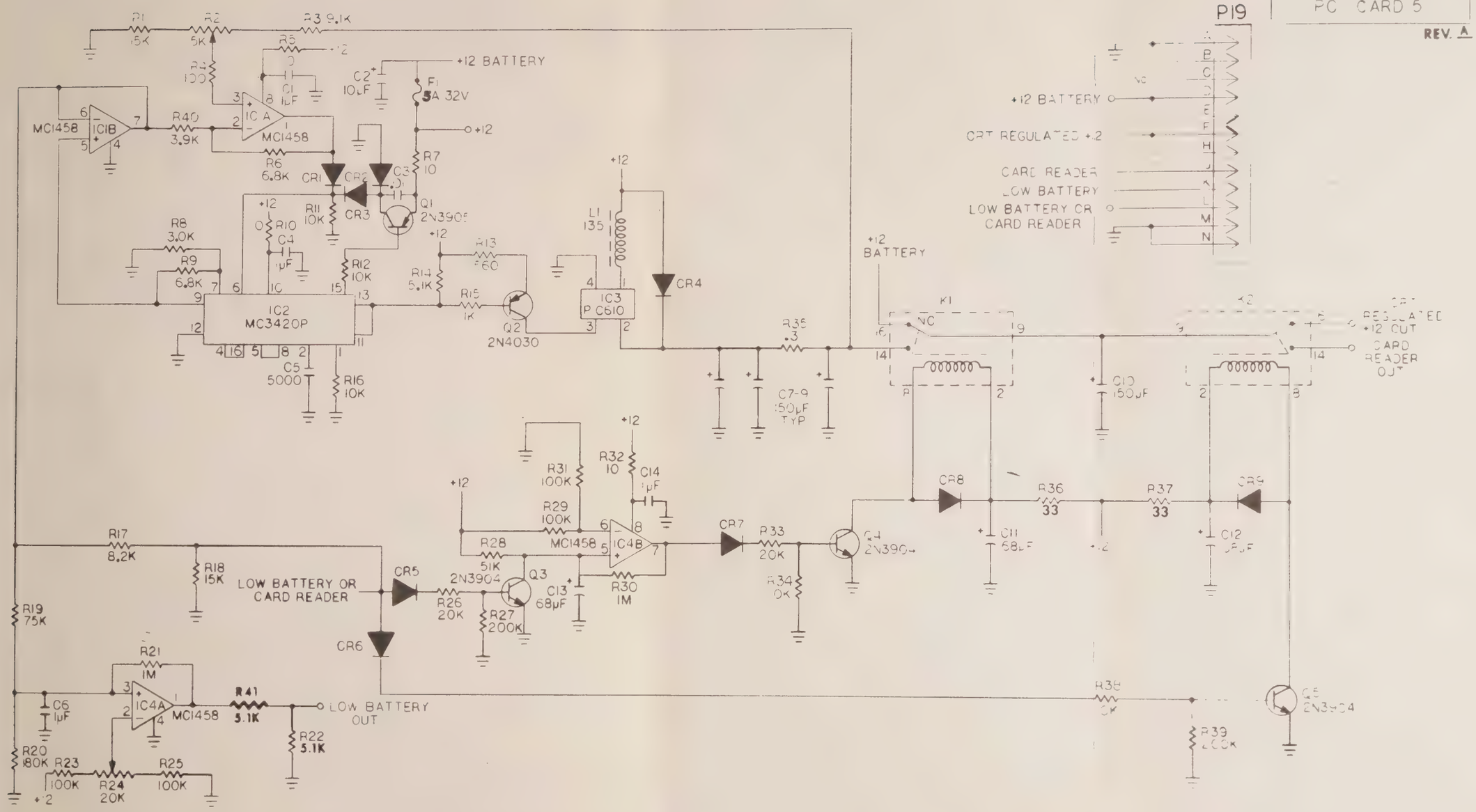
| IC | DEVICE | -6 | +5 | +5V | +5A | GND |
|---|---|---|---|---|---|---|
| 401 | 74LS08 | | | 14 | | 7 |
| 402,412,422 | 74LS32 | | | 14 | | 7 |
| 403,404 | MC74HC86 | | | | 16 | 8 |
| 405,407 | DM8097 | | | | | |
| 406 | REF01 | | 7 | | | 4 |
| 408 | AM6686 | 4 | | | 1 | 5 |
| 409 | AM2502 | | | | 16 | 8 |
| 410 | MC74HC174 | | | | 16 | 8 |
| 411 | MC74HC00 | | | | 14 | 7 |
| 412 | MC74HC08 | | | 14 | | 7 |
| 414,415 | MM74HC823 | | | 16 | | 8 |
| 416,417 | CDP1822SCD | | | 22 | | 11 |
| 418,419 | CD40257B | | | 16 | | 8 |
| 420,421 | CDP1856CD | | | 16 | | 8 |
| 423 | | | | 16 | | 8 |
| 424 | MC14013 | | | 14 | | 7 |

BOARD 5

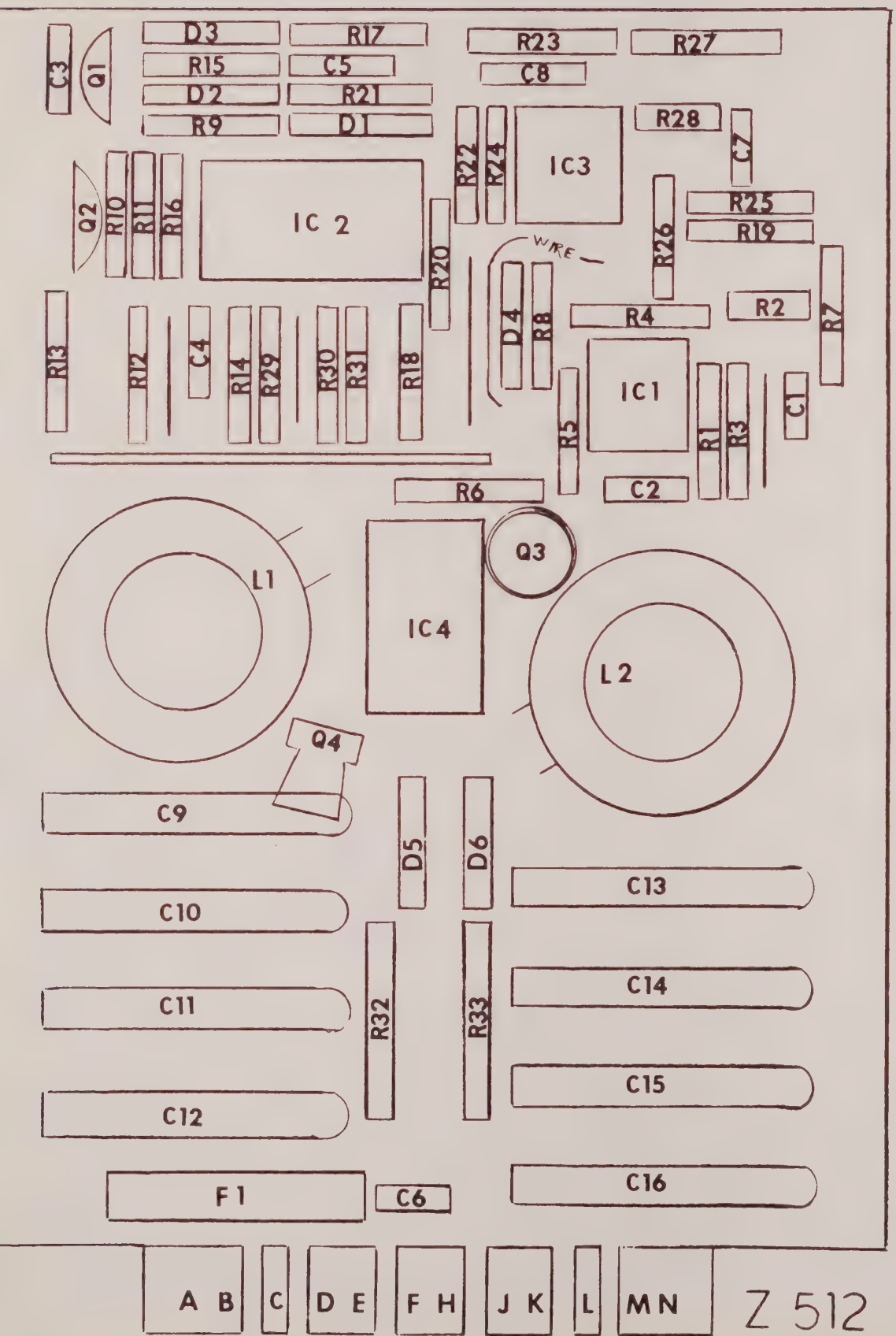



Z513 Rev —

1865 POWER SUPPLY
PC CARD 5
REV. A

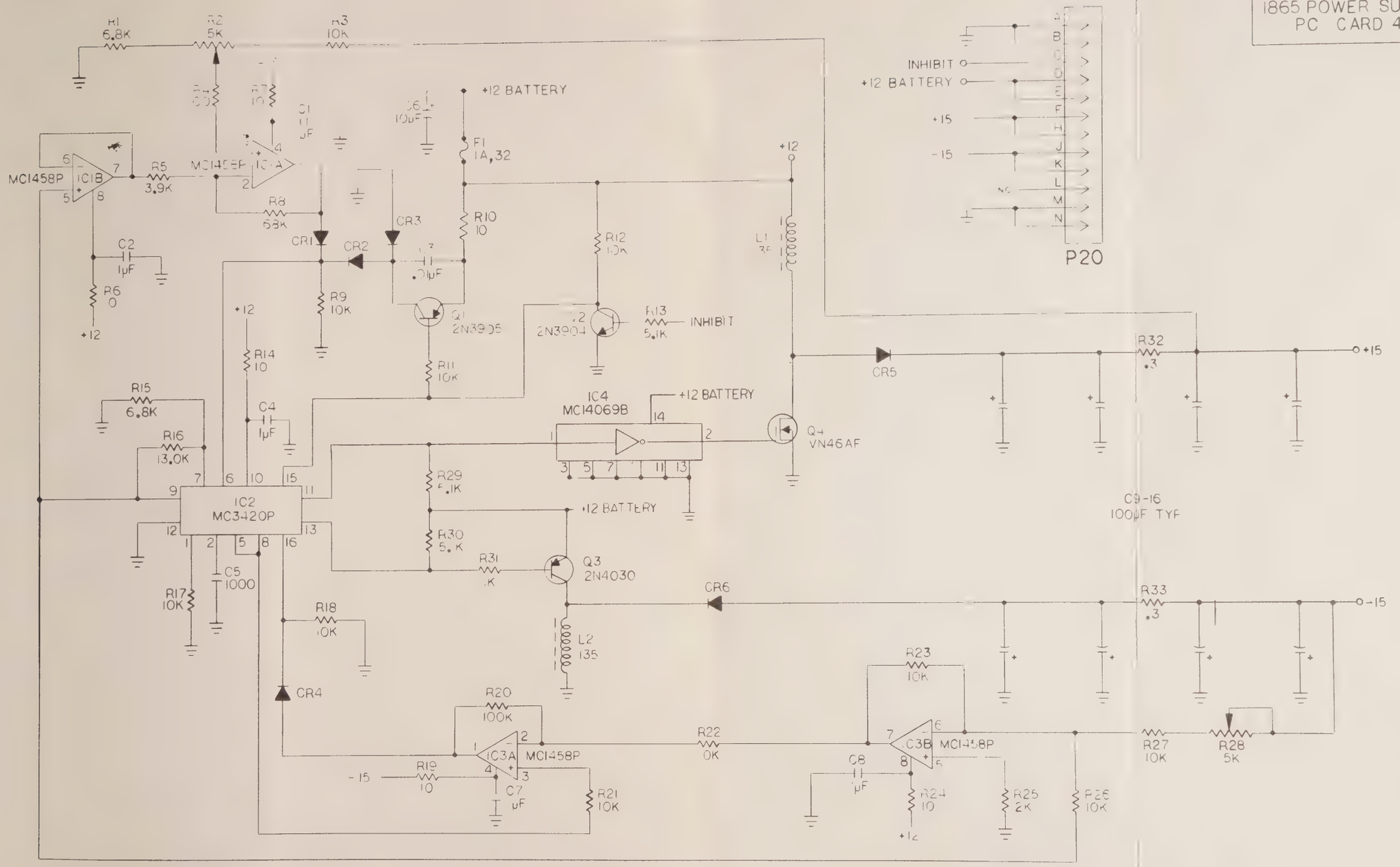


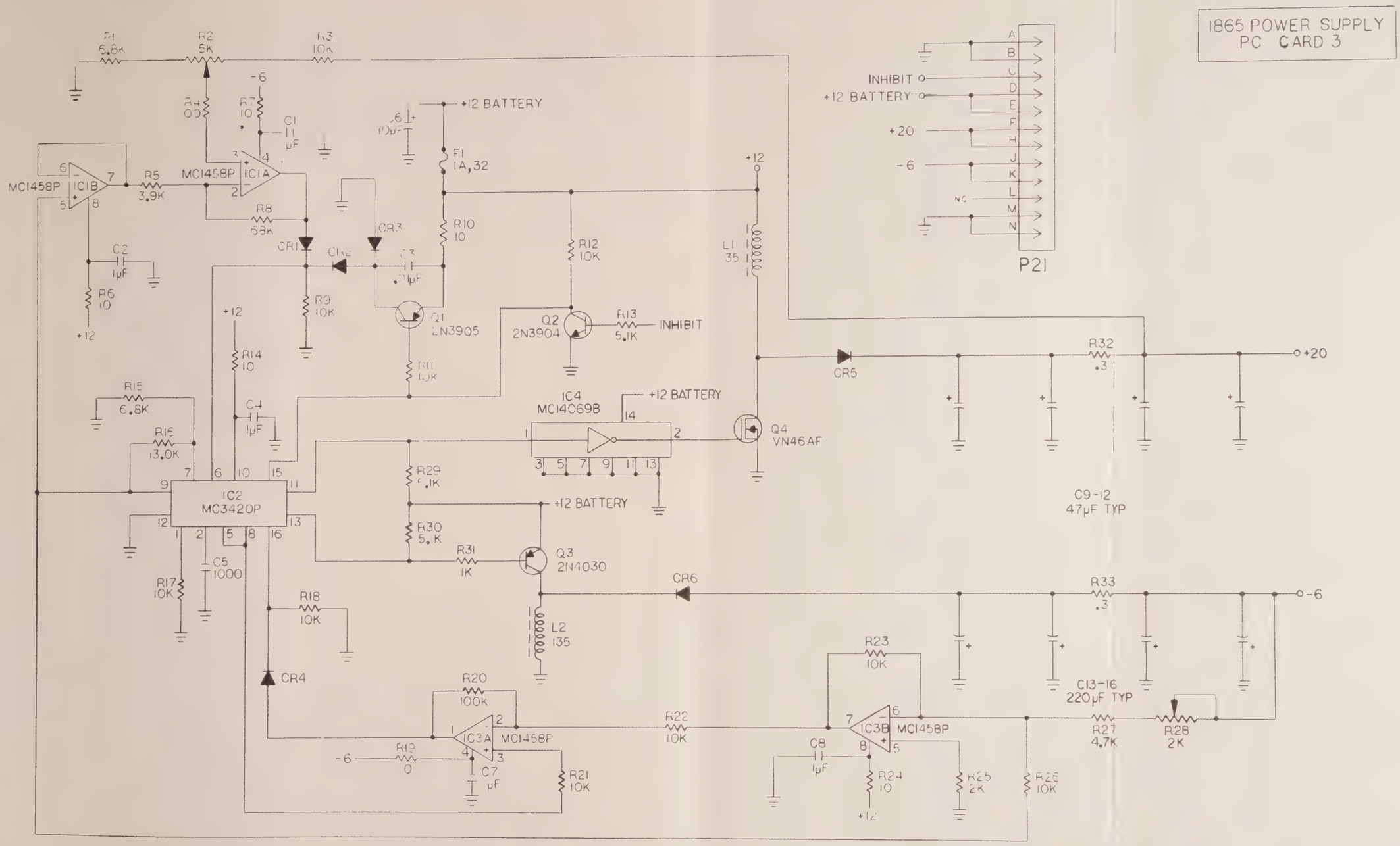
BOARD 3+4



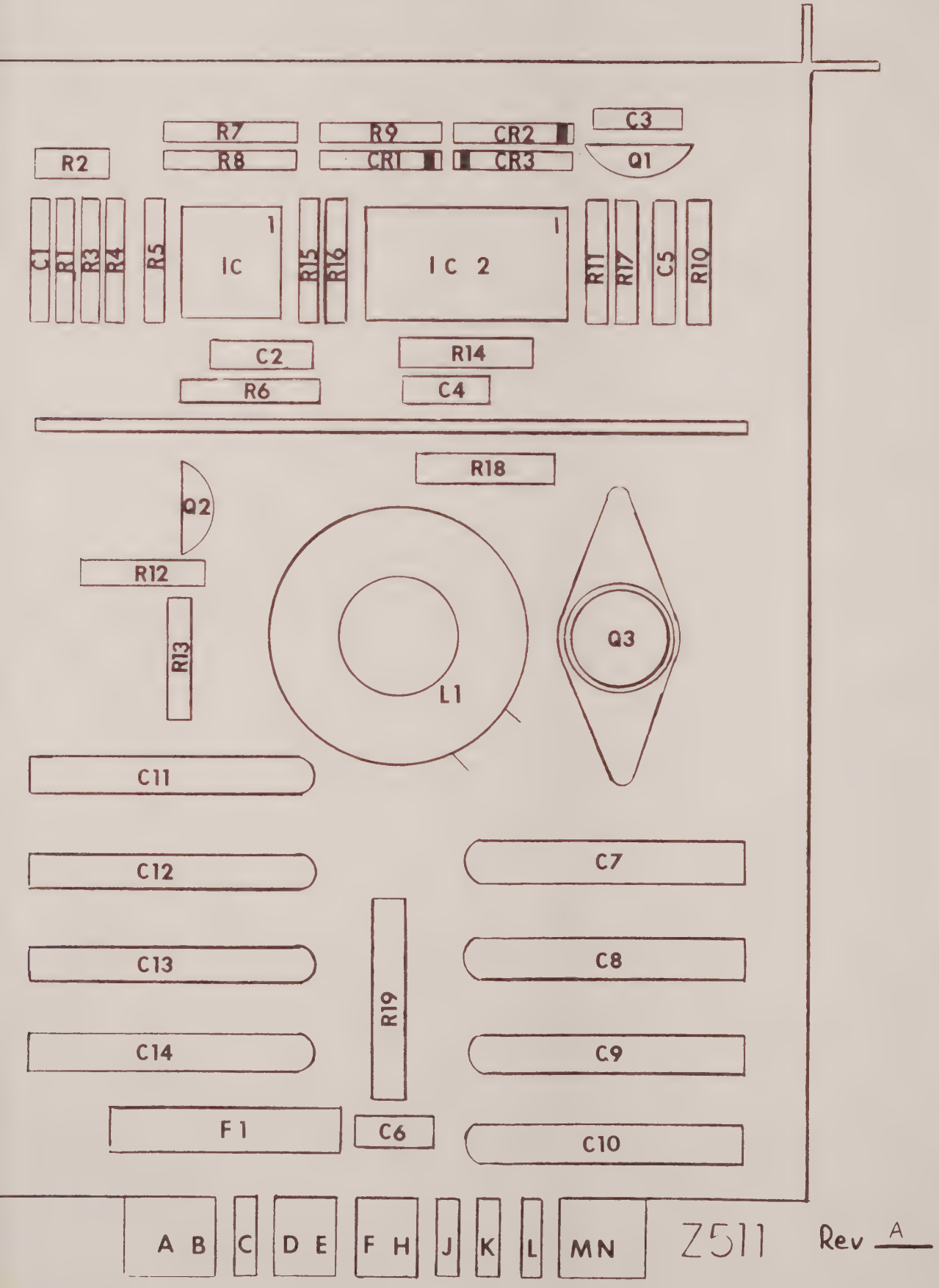

Z 512 Rev___

1865 POWER SUPPLY
PC CARD 4

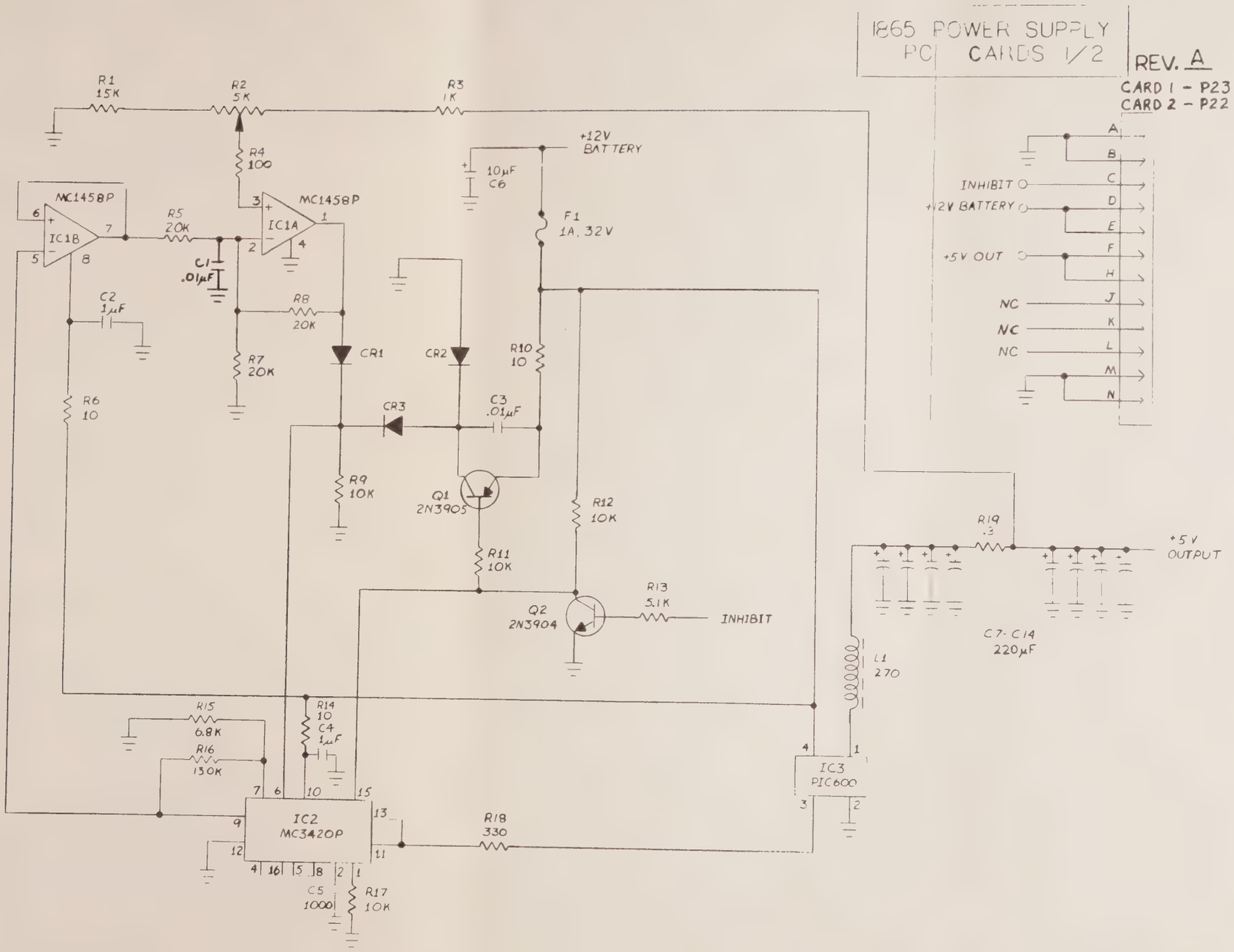


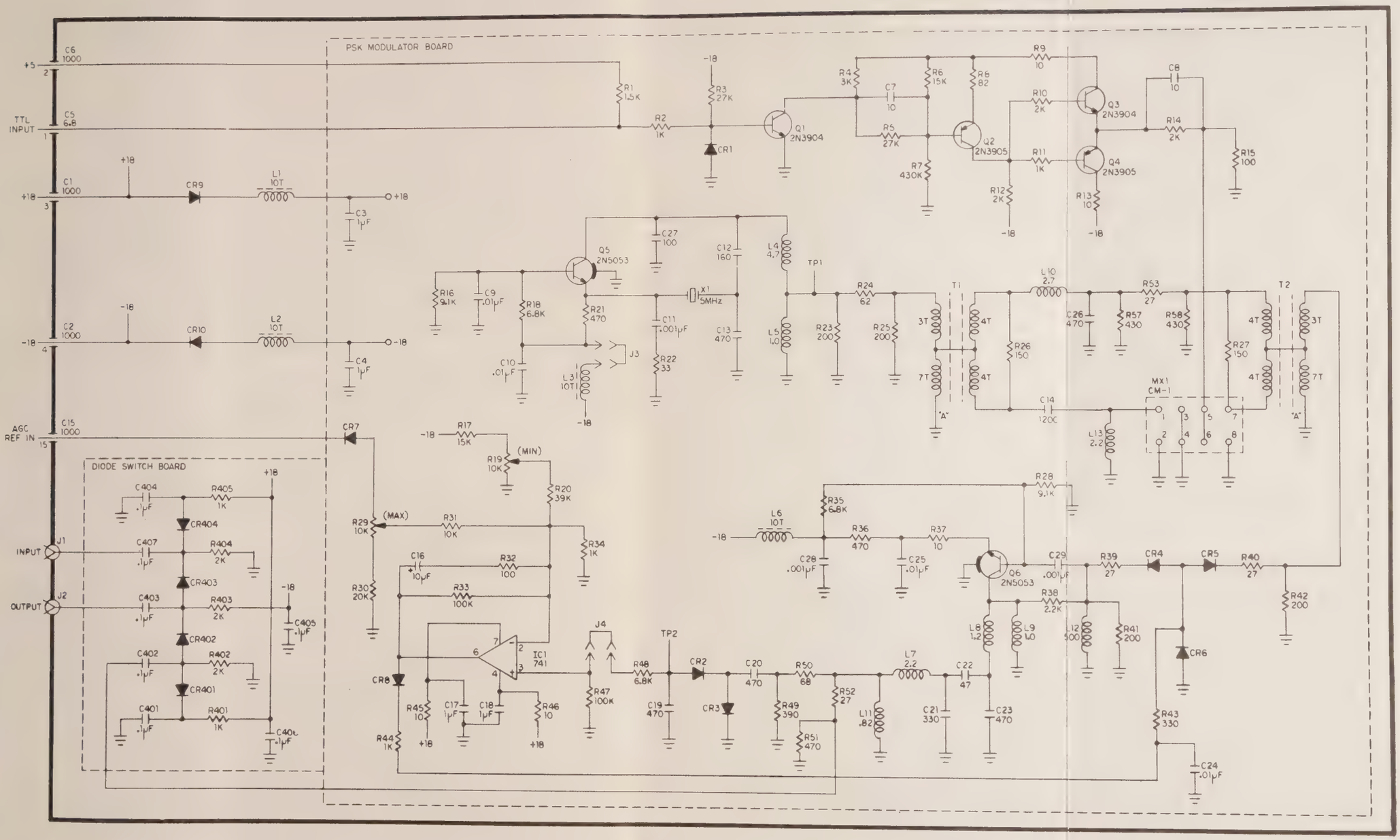

1865 POWER SUPPLY
PC CARD 3
P21
INHIBIT
+12 BATTERY
+20
-6
NC
R1 6.8K
R2 5K
R3 10K
R4 OO
R7 10
C1 11 µF
C6 10µF
F1 1A,32
+12
L1 35
R10 10
R12 10K
R8 58K
CR1
CR2
CR3
C3 .01µF
Q1 2N3905
Q2 2N3904
R13 5.1K
INHIBIT
R9 10K
R11 1.0K
R14 10
R15 6.8K
C4 1µF
R16 13.0K
IC4 MC14069B
Q4 VN46AF
CR5
R32 .3
C9-12 47µF TYP
IC2 MC3420P
R29 5.1K
R30 5.1K
R31 1K
Q3 2N4030
CR6
R33 .3
R17 10K
C5 1000
R18 10K
L2 135
CR4
R20 100K
R23 10K
C13-16 220µF TYP
IC3A MC1458P
IC3B MC1458P
R22 10K
R19 0
C7 µF
R21 10K
C8 1µF
R24 10
R25 2K
R26 10K
R27 4.7K
R28 2K
MC1458P IC1B
R5 3.9K
MC1458P IC1A
R6 10
C2 1µF

BOARD 1+2

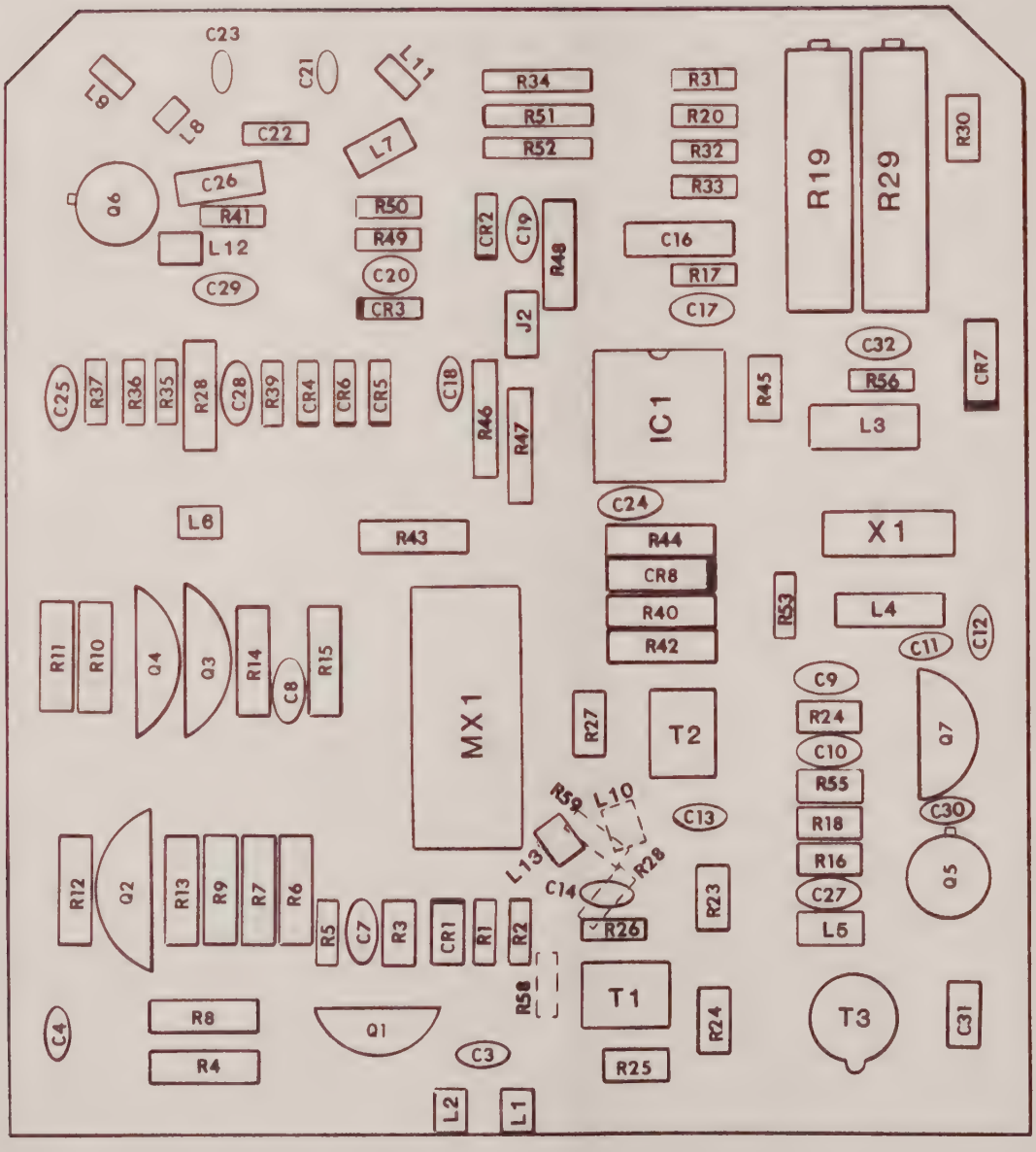



Z511 Rev A

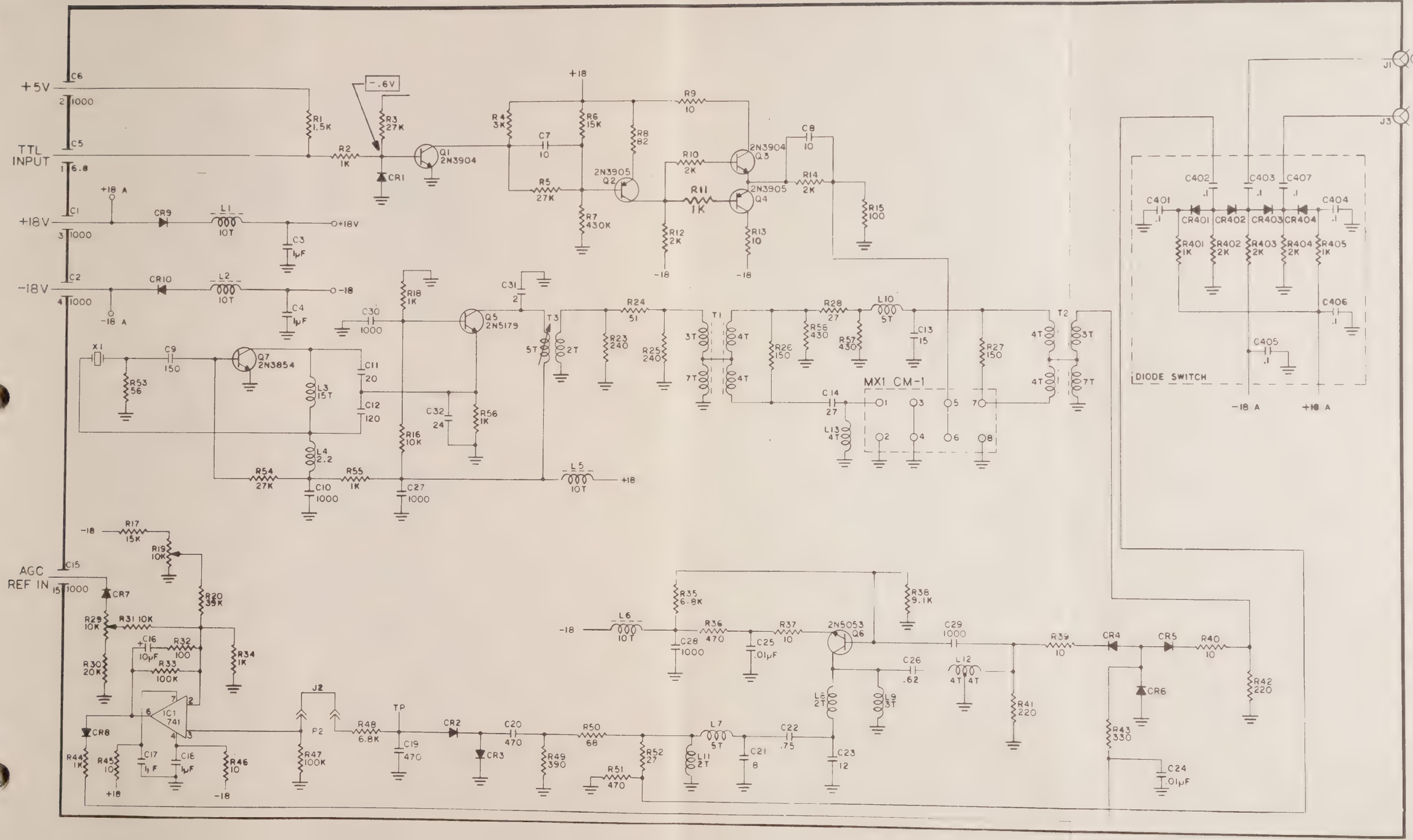

1865 POWER SUPPLY PC CARDS 1/2
REV. A
CARD 1 - P23
CARD 2 - P22
A
B
INHIBIT
C
+12V BATTERY
D
E
+5V OUT
F
H
NC
J
NC
K
NC
L
M
N
R1 15K
R2 5K
R3 1K
R4 100
+12V BATTERY
10µF C6
MC1458P
IC1B
IC1A
R5 20K
C1 .01µF
F1 1A, 32V
C2 1µF
R8 20K
R7 20K
CR1
CR2
R10 10
R6 10
CR3
C3 .01µF
R9 10K
Q1 2N3905
R12 10K
R11 10K
R13 5.1K
Q2 2N3904
INHIBIT
R19 .3
+5V OUTPUT
C7-C14 220µF
L1 270
R15 6.8K
R16 130K
R14 10
C4 1µF
IC3 PIC600
IC2 MC3420P
R18 330
C5 1000
R17 10K


PSK MODULATOR BOARD
DIODE SWITCH BOARD
TTL INPUT
AGC REF IN
INPUT
OUTPUT
+5
+18
-18
C6 1000
C5 6.8
C1 1000
C2 1000
C15 1000
C3 .1μF
C4 .1μF
L1 10T
L2 10T
CR9
CR10
R1 1.5K
R2 1K
R3 27K
CR1
Q1 2N3904
R4 3K
R5 27K
R6 15K
R7 430K
C7 10
R8 82
Q2 2N3905
R9 10
R10 2K
R11 1K
R12 2K
R13 10
Q3 2N3904
Q4 2N3905
C8 10
R14 2K
R15 100
Q5 2N5053
C27 100
C12 160
L4 4.7
R16 9.1K
C9 .01μF
R18 6.8K
R21 470
X1 5MHz
C11 .001μF
C10 .01μF
L3 10T
J3
R22 33
C13 470
L5 1.0
TP1
R24 62
R23 200
R25 200
T1
3T
4T
7T
"A"
R26 150
L10 2.7
R53 27
C26 470
R57 430
R58 430
T2
R27 150
C14 120C
MX1 CM-1
L13 2.2
CR7
R17 15K
R19 10K (MIN)
R20 39K
R29 10K (MAX)
R31 10K
R34 1K
R30 20K
C16 10μF
R32 100
R33 100K
IC1 741
J4
R47 100K
R48 6.8K
TP2
CR2
CR3
CR8
C20 470
R50 68
R49 390
R51 470
R52 27
L7 2.2
L11 .82
C21 330
C22 47
C23 470
L6 10T
R35 6.8K
R36 470
R37 10
C28 .001μF
C25 .01μF
Q6 2N5053
C29 .001μF
R28 9.1K
R38 2.2K
L8 1.2
L9 1.0
L12 900
R41 200
R39 27
CR4
CR5
R40 27
R42 200
CR6
R43 330
C24 .01μF
R44 1K
R45 10
C17 1μF
C18 1μF
R46 10
C404 .1μF
R405 1K
CR404
C407 .1μF
R404 2K
CR403
C403 .1μF
R403 2K
CR402
C402 .1μF
R402 2K
CR401
C401 .1μF
R401 1K
C405 .1μF
C406 .1μF
J1
J2

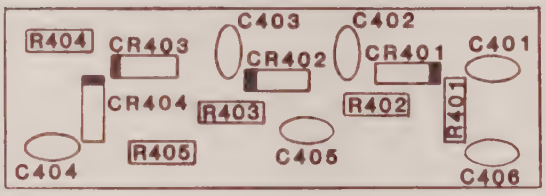
M135-155

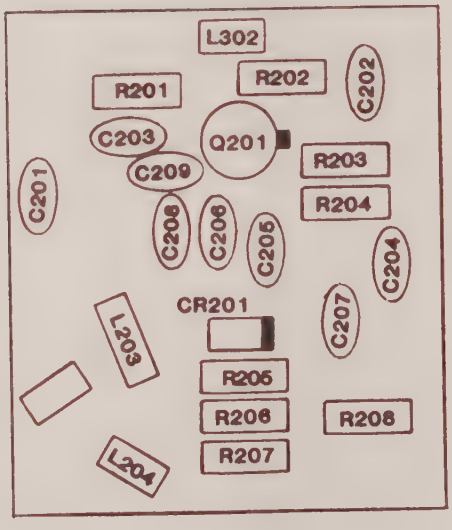

C23
L9
L8
C21
L11
C22
L7
R34
R51
R52
R31
R20
R32
R33
R19
R29
R30
C26
Q6
R41
L12
C29
R50
R49
C20
CR3
CR2
C19
R48
J2
C16
R17
C17
C32
R56
L3
CR7
C25
R37
R36
R35
R28
C28
R39
CR4
CR6
CR5
C18
R46
R47
IC1
R45
C24
L6
R43
R44
CR8
R40
R42
X1
L4
R53
C11
C12
R11
R10
Q4
Q3
R14
C8
R15
MX1
R27
T2
C9
R24
C10
R55
R18
R16
C27
L5
Q7
C30
Q5
R58
L10
C13
L13
C14
R28
R23
R12
Q2
R13
R9
R7
R6
R5
C7
R3
CR1
R1
R2
R26
R58
T1
R24
T3
C31
C4
R8
R4
Q1
C3
R25
L2
L1

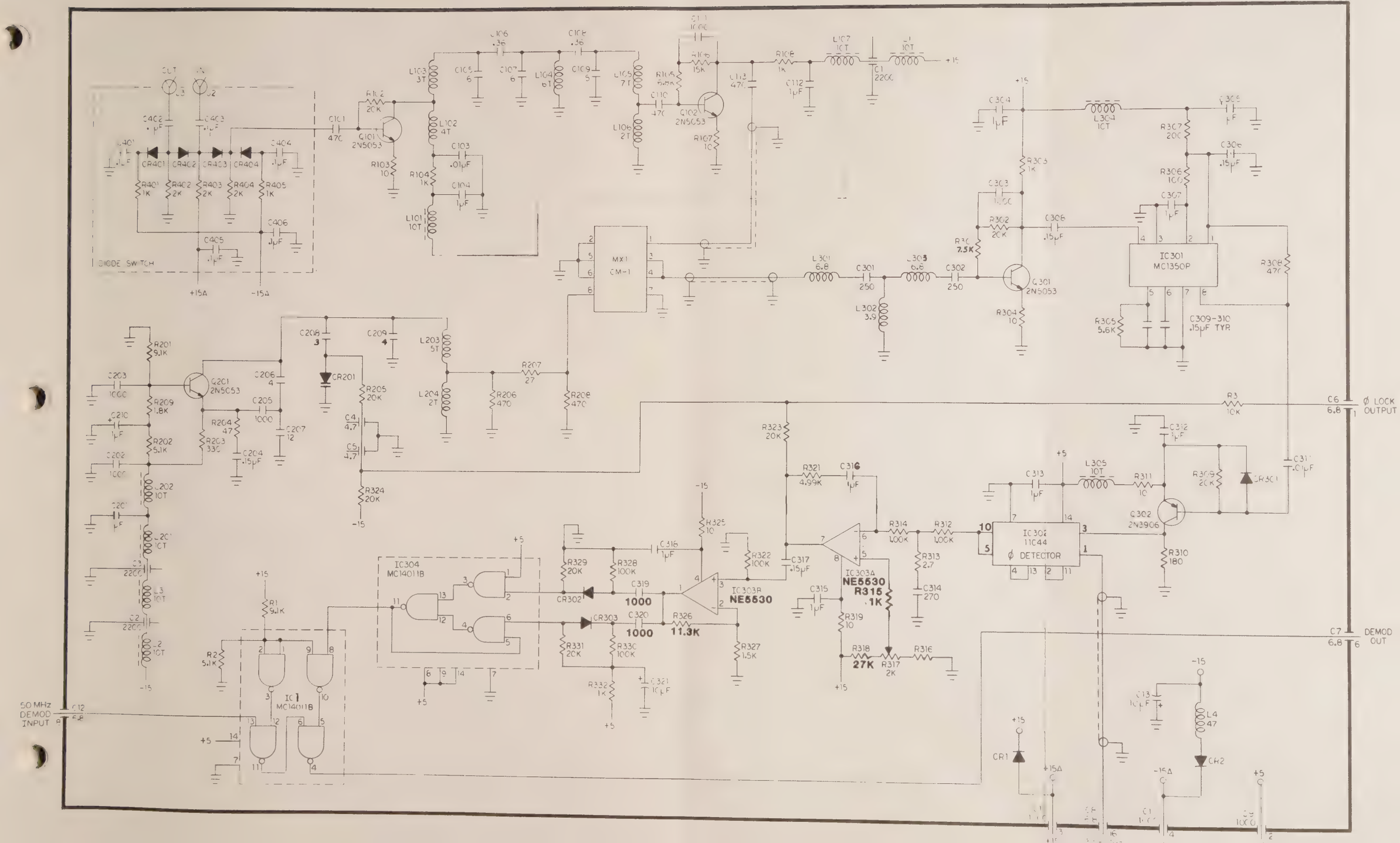
PSK MODULATOR
MI35-155
REV A



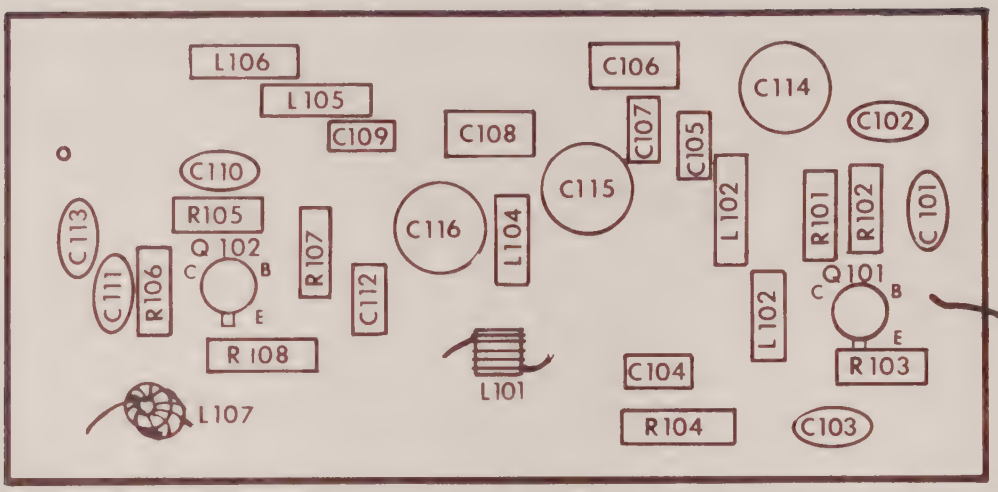
# M119-155
# DIODE SWITCH BOARD

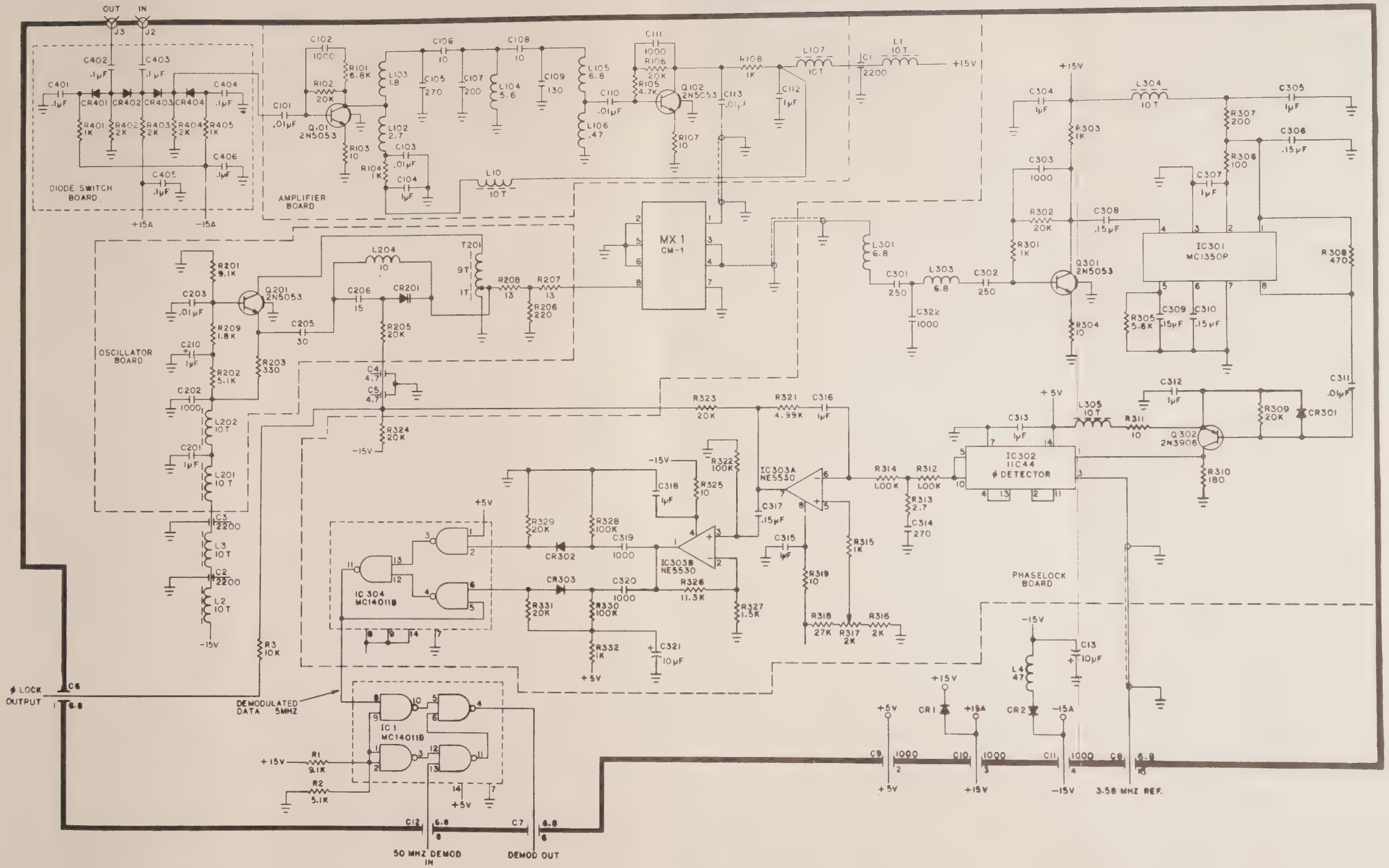



DIODE SWITCH
+15Δ
-15Δ
MX1
CM-1
IC301
MC1350P
C309-310
.15μF TYP
IC302
11C44
Φ DETECTOR
IC303A
NE5530
IC303B
NE5530
IC304
MC14011B
IC1
MC14011B
Q101
2N5053
Q102
2N5053
Q201
2N5053
Q301
2N5053
Q302
2N3906
CR201
CR301
CR302
CR303
CR1
CR2
Φ LOCK
OUTPUT
DEMOD
OUT
50 MHz
DEMOD
INPUT
1000
11.3K
27K
.1K

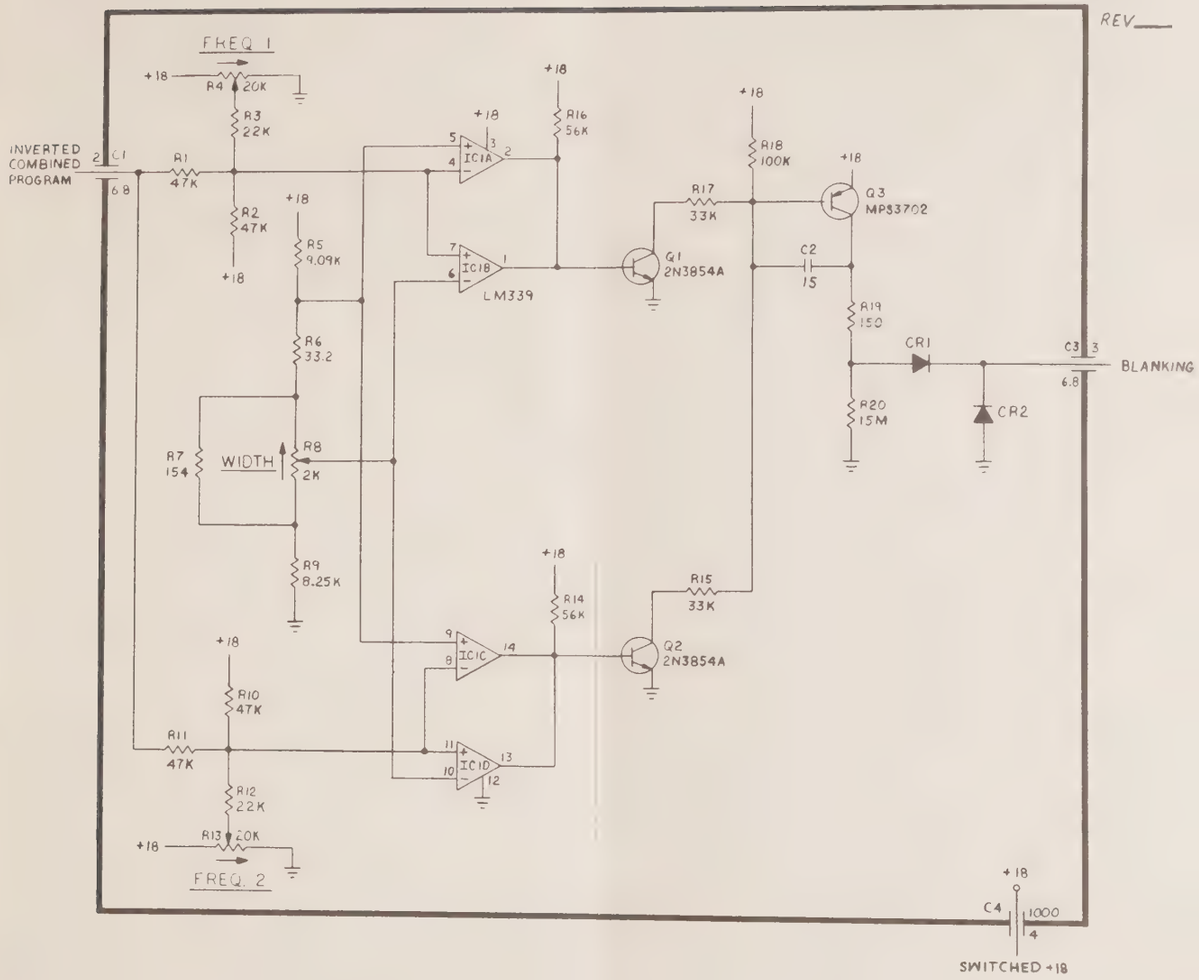
1218-00-0433


L106
L105
C109
C108
C106
C107
C105
C114
C102
C110
R105
C115
L102
R101
R102
C101
C113
Q 102
C
B
E
C116
L104
R107
C111
R106
C112
R 108
L101
C104
R104
Q 101
C
B
E
L102
R 103
C103
L107

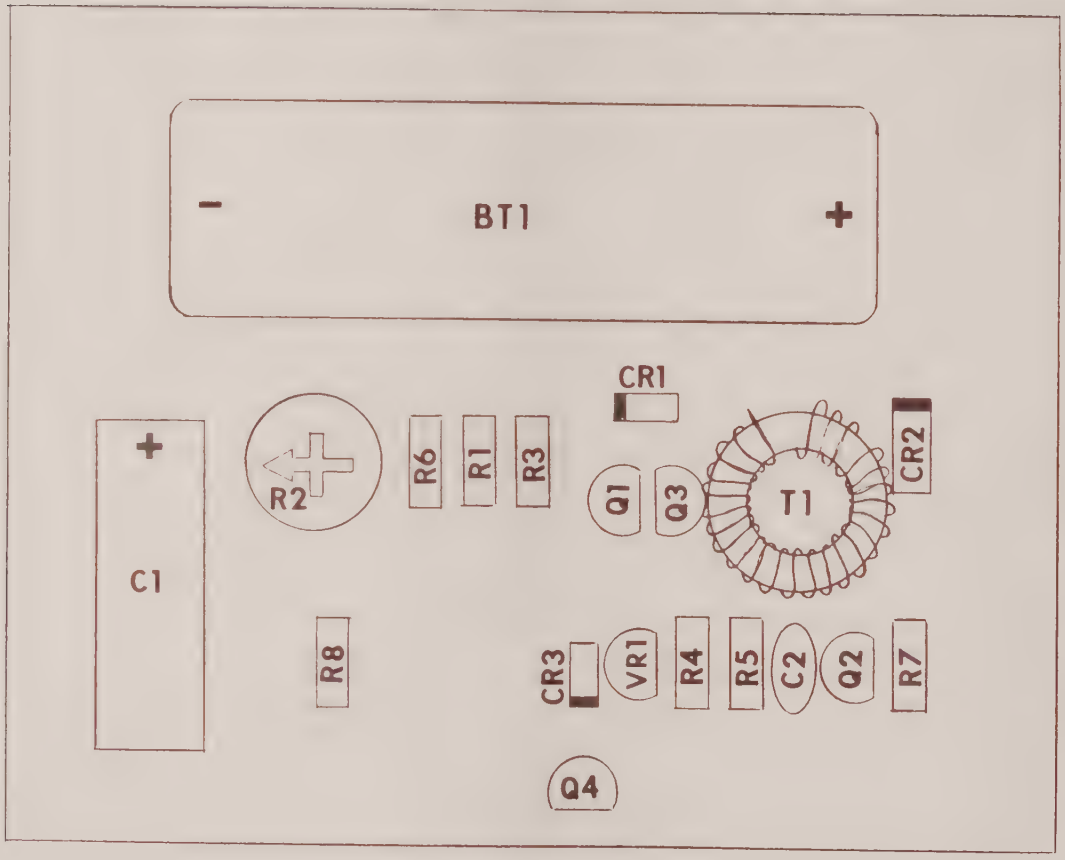

OUT
IN
J3
J2
DIODE SWITCH BOARD
AMPLIFIER BOARD
OSCILLATOR BOARD
PHASELOCK BOARD
MX 1
CM-1
Q101 2N5053
Q102 2N5053
Q201 2N5053
Q301 2N5053
Q302 2N3906
IC301 MC1350P
IC302 11C44 ϕ DETECTOR
IC303A NE5530
IC303B NE5530
IC304 MC14011B
IC1 MC14011B
+15V
-15V
+5V
+15A
-15A
ϕ LOCK OUTPUT
DEMODULATED DATA 5MHZ
50 MHZ DEMOD IN
DEMOD OUT
3.58 MHZ REF.

SCHEMATIC — M113
PILOT CARRIER NOTCHES

REV___

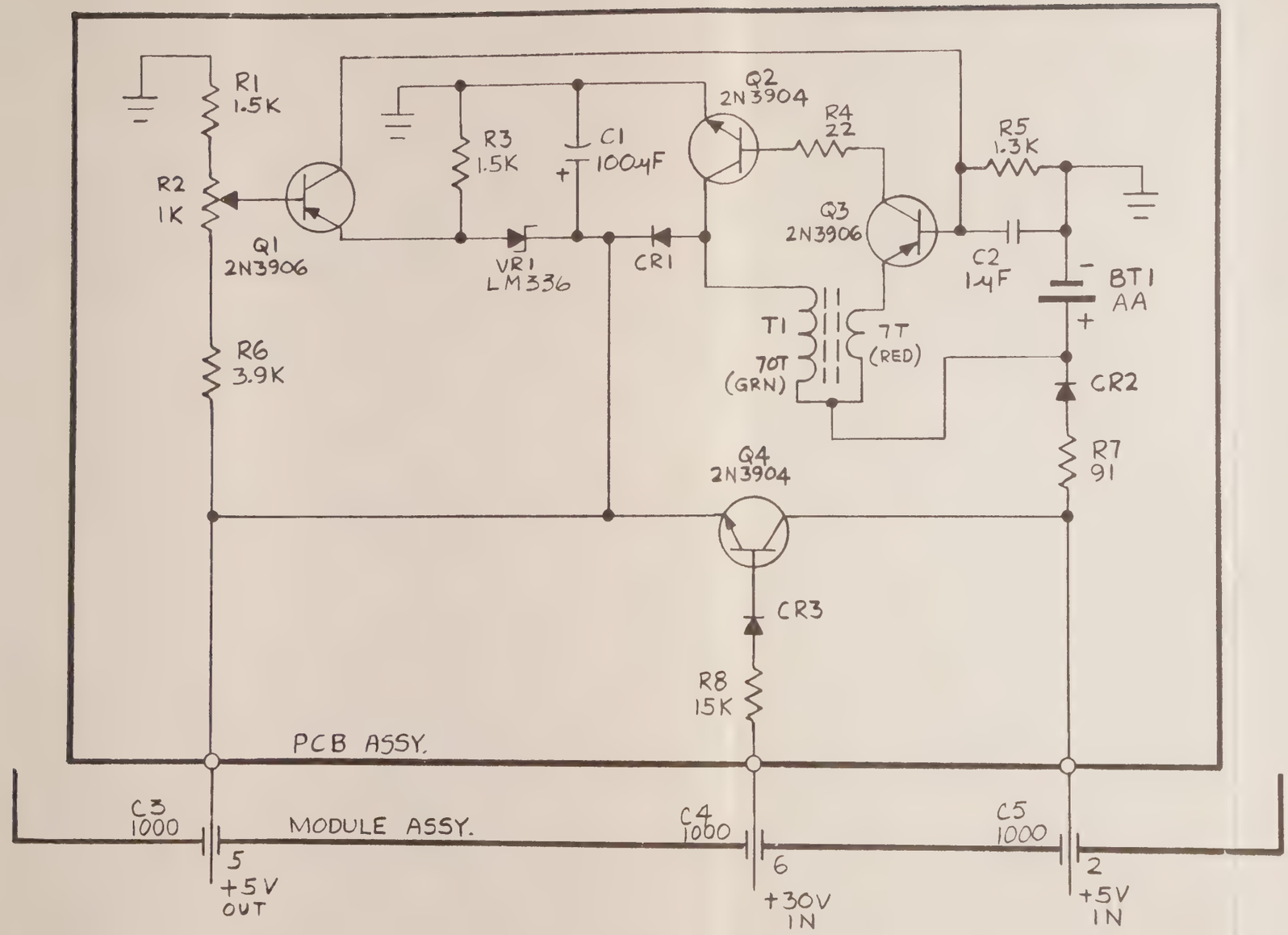


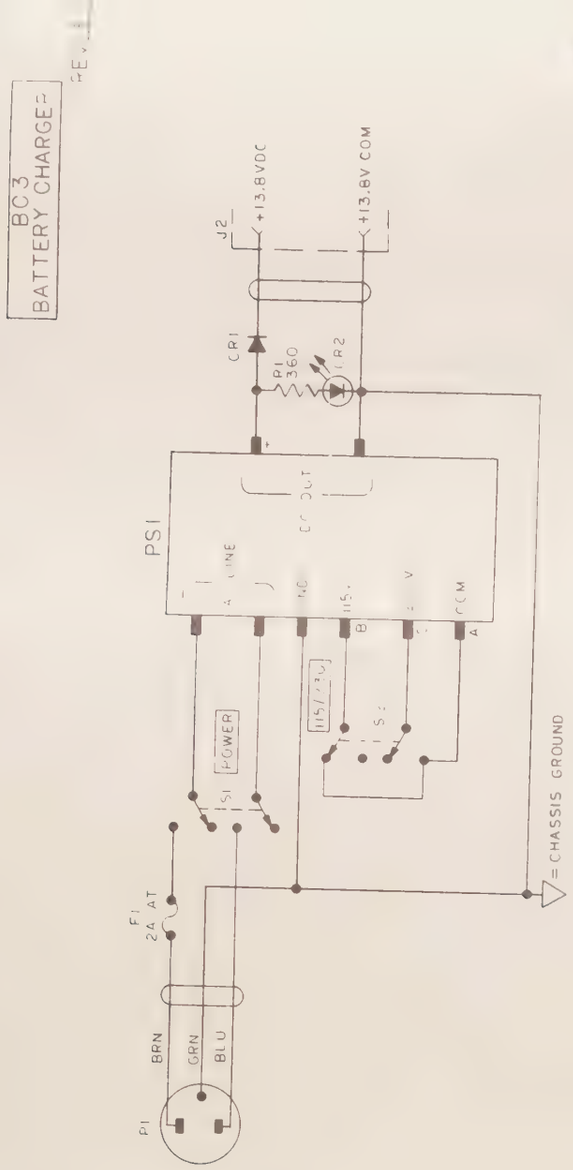
# Z1007

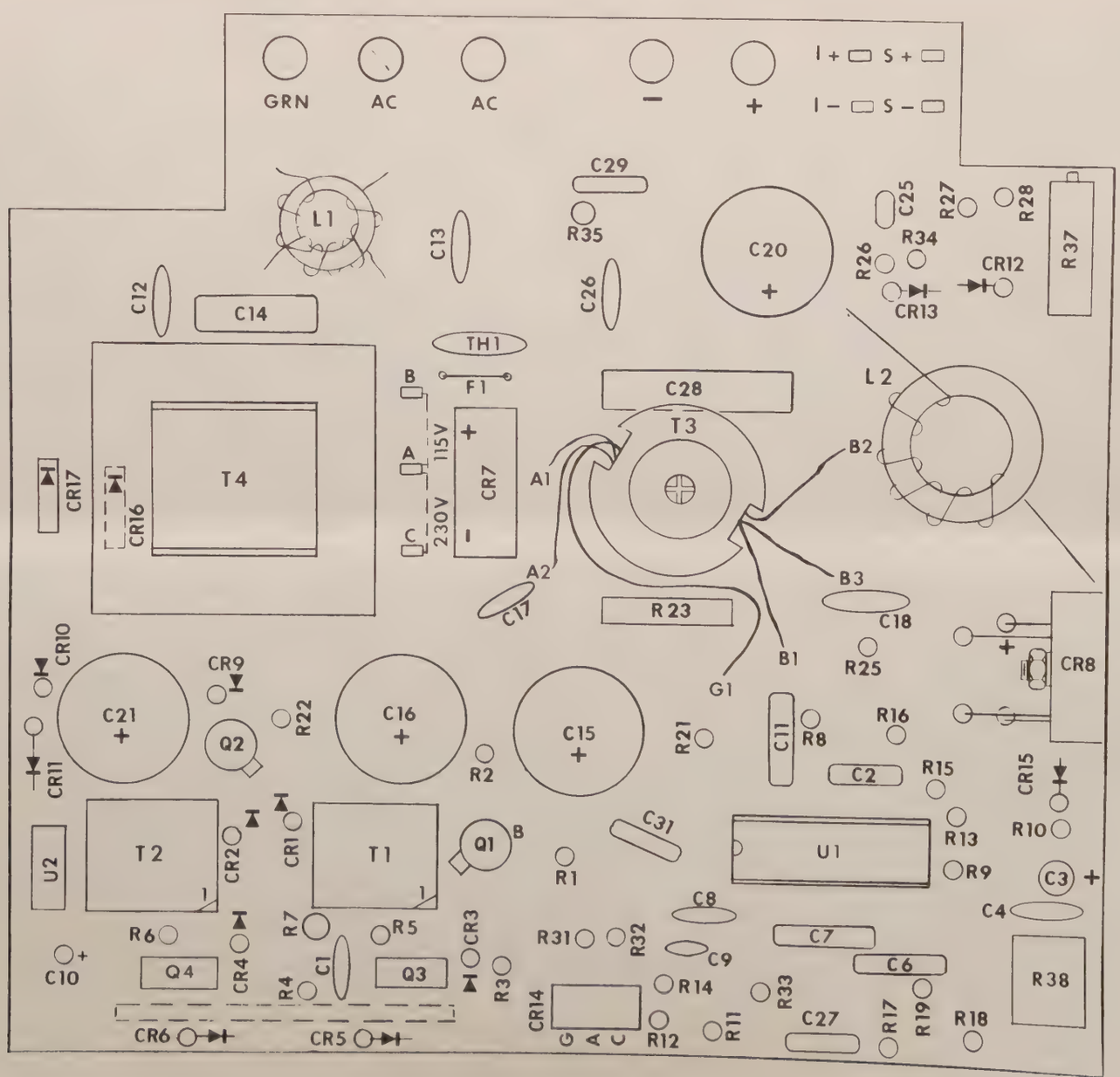


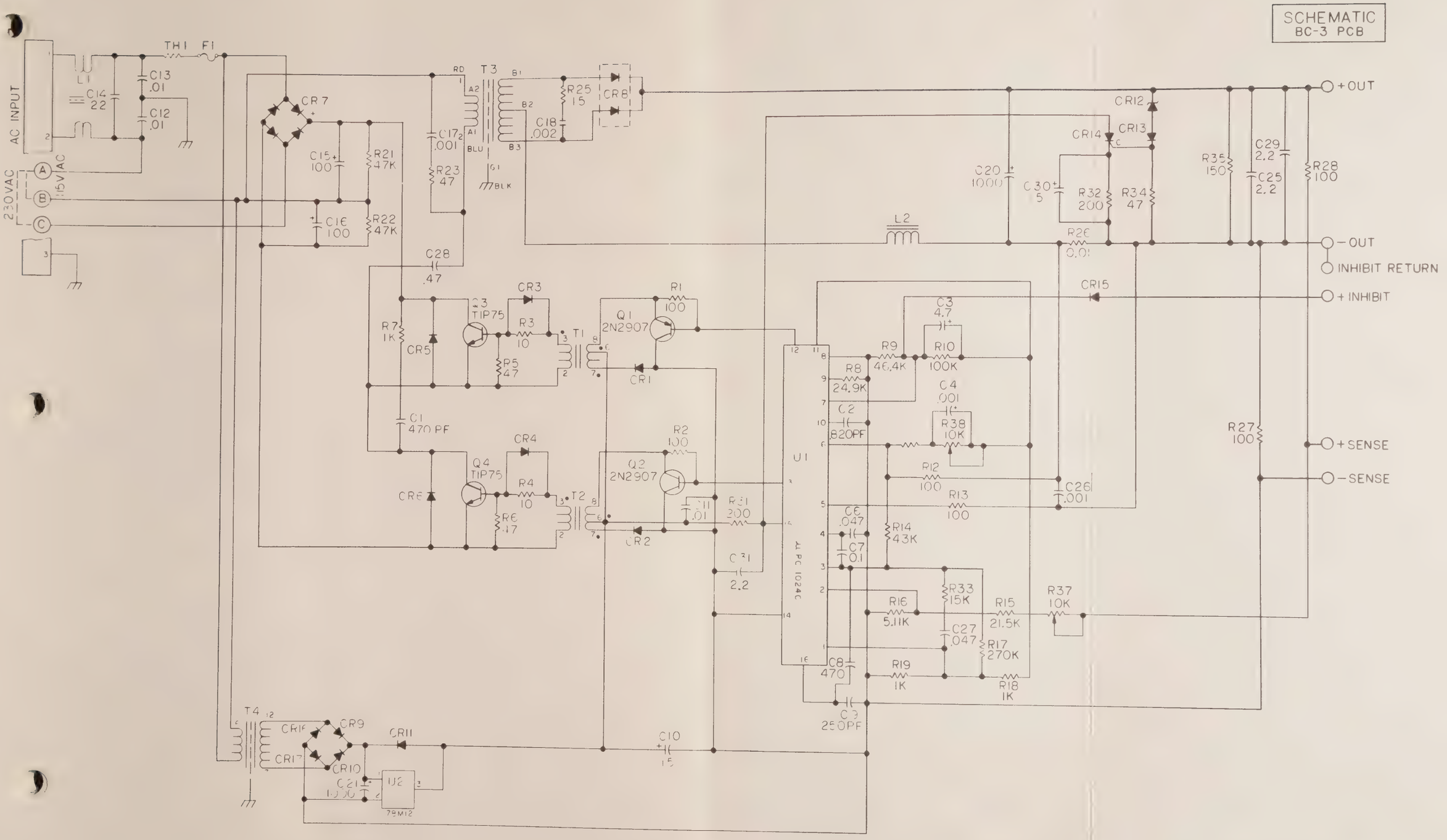
M152
BATTERY BACK-UP

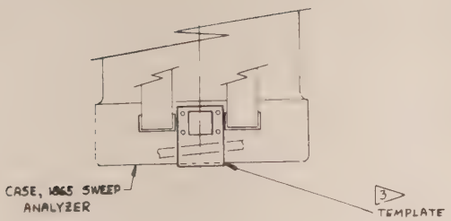
REV

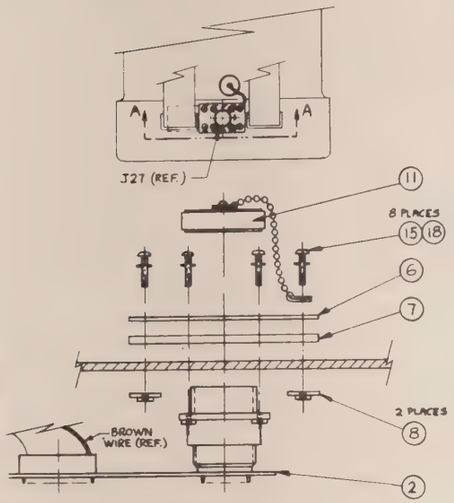



BC3
BATTERY CHARGER
J2
+13.8VDC
+13.8V COM
CR1
P1
360
IR2
PS1
POWER
S1
115/230
S2
F1
2A AT
BRN
GRN
BLU
P1
= CHASSIS GROUND

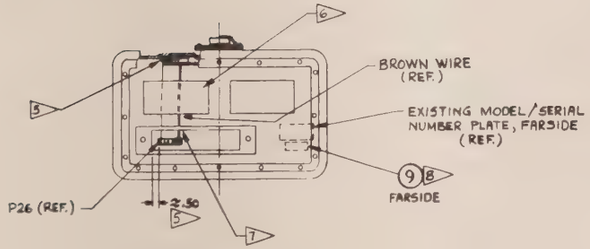

GRN
AC
AC
I+
S+
I−
S−
L1
C29
R35
C26
C20
C25
R27
R28
R34
R26
CR12
CR13
R37
C12
C14
C13
TH1
F1
B
A
C
115V
230V
CR7
T4
CR17
CR16
C28
T3
L2
A1
A2
B1
B2
B3
C17
R23
C18
R25
G1
CR8
CR10
CR11
C21
CR9
Q2
R22
C16
R2
C15
R21
C11
R8
R16
C2
R15
CR15
R10
R13
R9
C31
U1
C3
C4
U2
T2
CR2
CR1
T1
Q1
R1
C8
C7
C6
R38
R6
R7
R5
R31
R32
C9
C10
Q4
CR4
R4
C1
Q3
CR3
R3
R14
R33
CR14
G A C
R12
R11
C27
R17
R19
R18
CR6
CR5


SCHEMATIC
BC-3 PCB
AC INPUT
230VAC
115VAC
TH1
F1
C13 .01
C14 22
C12 .01
CR7
C15 100
C16 100
R21 47K
R22 47K
C17 .001
R23 47
T3
C18 .002
R25 15
CR8
C28 .47
R7 1K
CR5
CR3
Q3 TIP75
R3 10
R5 47
T1
Q1 2N2907
R1 100
CR1
C1 470 PF
CR4
Q4 TIP75
R4 10
R6 47
T2
Q2 2N2907
R2 100
CR2
C11 .01
R31 200
C31 2.2
T4
CR6
CR9
CR7
CR10
CR11
C21 1.5
U2
79M12
C10
U1
AM PC 1024C
C3 4.7
R9 46.4K
R10 100K
R8 24.9K
C4 .001
C2 820PF
R38 10K
R12 100
R13 100
C26 .001
C6 .047
C7 0.1
R14 43K
R33 15K
R16 5.11K
R15 21.5K
R37 10K
C27 .047
R17 270K
C8 470
R19 1K
R18 1K
C9 250PF
L2
CR12
CR13
CR14
C20 1000
C30 5
R32 200
R34 47
R26 0.01
CR15
R35 150
C29 2.2
C25 2.2
R28 100
R27 100
+OUT
-OUT
INHIBIT RETURN
+INHIBIT
+SENSE
-SENSE




EXPLODED SECTION A-A 4
SCALE 1:1




VIEW INTO CASE WITH CHASSIS ASSY. REMOVED

## INSTALLATION PROCEDURE, CASE MODIFICATION & ASSEMBLY

1. REMOVE (16) SCREWS THAT ATTACH FRONT PANEL OF CHASSIS ASSEMBLY TO CASE.
2. REMOVE CHASSIS ASSEMBLY FROM CASE.

3 CENTER TEMPLATE 1414-00-0001 BETWEEN (2) COVER STRAPS & ATTACH TO CASE AS SHOWN USING MASKING TAPE OR EQUIVALENT. DRILL (4) .113 DIA. HOLES, SCRIBE & CUT OUT SQUARE CONNECTOR OPENING.

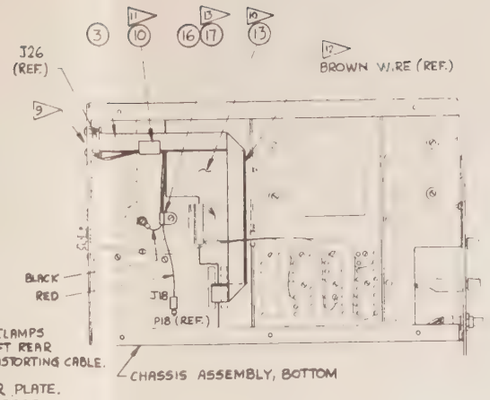
4 REMOVE TEMPLATE & ASSEMBLE AS SHOWN IN SECTION A-A.

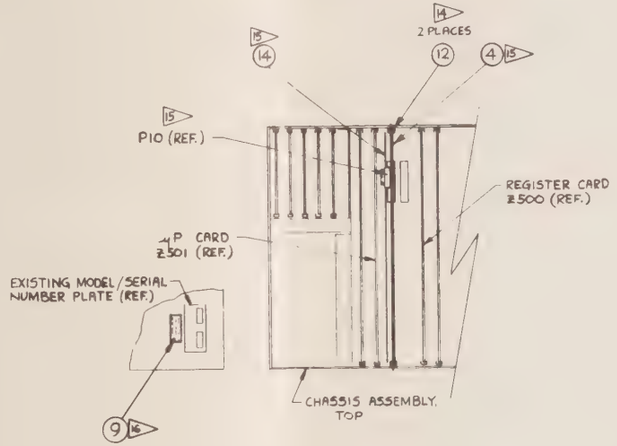
5 REMOVE RELEASE LINERS FROM (2) RIBBON CABLE CLAMPS (PART OF ITEM #2) & DRESS CABLE AT SLIGHT ANGLE TO LEFT REAR SIDE OF CHANNEL SO THAT .50 DIM. CAN BE HELD WITHOUT DISTORTING CABLE.

6 REMOVE FOAM BLOCK FROM LEFT SIDE OF REAR PLATE. PRESS RIBBON CABLE TO STICKY SURFACE OF REAR PLATE.

7 SEPARATE & ROUTE CONNECTOR BETWEEN FOAM & REAR PLATE. REPLACE FOAM BLOCK REMOVED IN STEP 6.

8 ATTACH LABEL (ITEM #9) DIRECTLY BELOW & CENTERED ON EXISTING MODEL/SERIAL NUMBER PLATE.




## INSTALLATION PROCEDURE, CHASSIS MODIFICATION & ASSEMBLY

9 REMOVE (17) SCREWS ON TOP, (9) SCREWS ON BOTTOM & REMOVE (2) COVERS. REMOVE COVER PLATE FROM 'OPTION' OPENING ON REAR PLATE. RETURN PLATE, (2) WASHERS & (2) HEX. NUTS TO STOCK. ATTACH PCB END OF RIBBON CABLE ASSEMBLY (ITEM #3) TO REAR PLATE AS SHOWN USING (2) SCREWS THAT PREVIOUSLY HELD COVER PLATE.

10 SLIDE INSULATOR (ITEM # 13) INTO PLACE AS SHOWN. (UNDER EXISTING WIRING HARNESS & CONNECTORS)

11 ATTACH CABLE CLAMP (ITEM # 10) TO RED & BLACK WIRES AND RIBBON CABLE (ITEM #3) REMOVE RELEASE LINER & ATTACH AS SHOWN.

12 FOLD & ROUTE RIBBON CABLE EXACTLY AS SHOWN. NOTE LOCATION OF BROWN WIRE. INSERT CONNECTOR END THRU OPENING IN PCB AS SHOWN.

13 REMOVE #4-40 x 1/8 LG SCREW & ATTACH CABLE CLAMP (ITEM #17) USING #4-40 x 5/16 LG SCREW (ITEM #16). RETURN ORIGINAL #4-40 x 1/4 LG SCREW TO STOCK. ATTACH J18 TO P18 ON PCB (RED WIRE). REMOVE SCREW ON GROUND PLANE OF PCB & ATTACH TERMINAL LUG OF BLACK WIRE AS SHOWN.

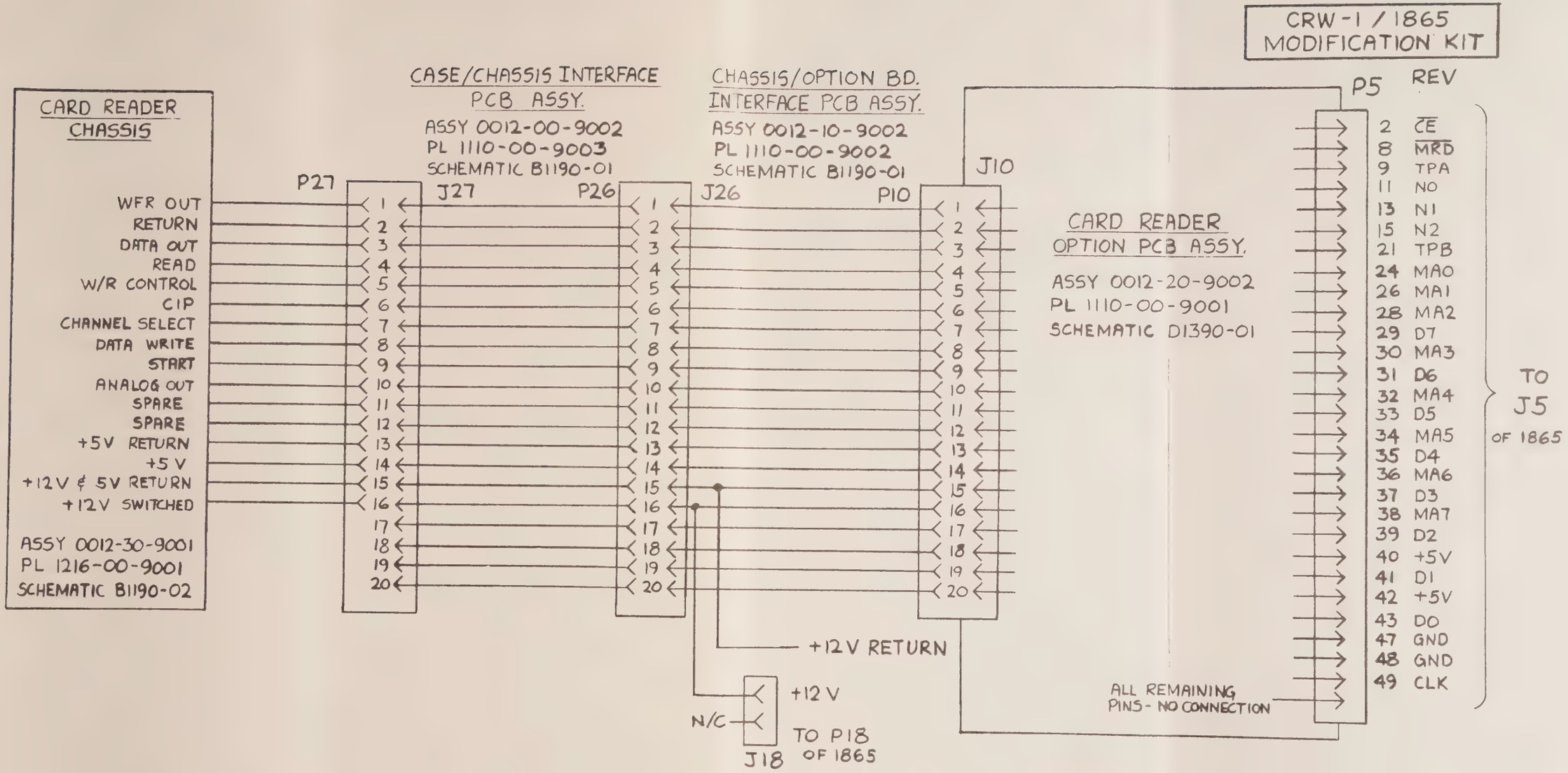
14 TURN CHASSIS ASSEMBLY OVER. ATTACH (2) CARD GUIDES (ITEM # 12) IN LOCATIONS SHOWN.

15 INSERT INSULATOR (ITEM # 14), CARD READER OPTION PCB (ITEM # 4), & ATTACH CONNECTOR END OF RIBBON CABLE ASSEMBLY TO J10 OF PCB AS SHOWN. NOTE ORDER (BACK TO FRONT).

1. μP PCB
2. RIBBON CABLE
3. INSULATOR
4. CARD READER OPTION PCB
5. OPEN
6. REGISTER PCB

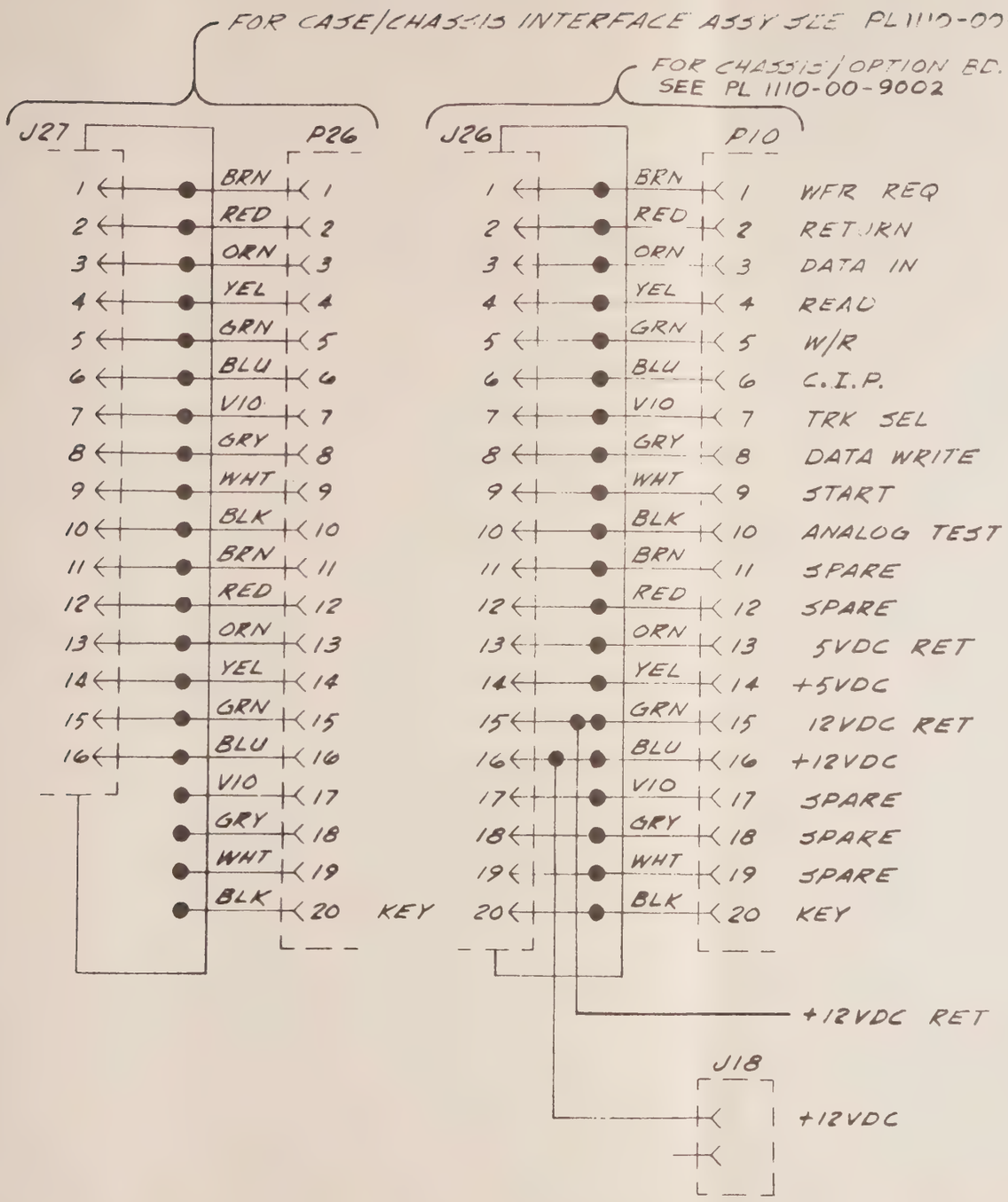
16 ATTACH LABEL (ITEM #9) DIRECTLY BELOW & CENTERED ON EXISTING MODEL/SERIAL NUMBER PLATE.

17. REASSEMBLE TOP & BOTTOM COVERS. REASSEMBLE CHASSIS ASSEMBLY TO CASE. ATTACH CONNECTOR P26 OF CASE TO J26 OF CHASSIS ASSEMBLY.


CRW-1 / 1865
MODIFICATION KIT
CARD READER
CHASSIS
WFR OUT
RETURN
DATA OUT
READ
W/R CONTROL
CIP
CHANNEL SELECT
DATA WRITE
START
ANALOG OUT
SPARE
SPARE
+5V RETURN
+5 V
+12V & 5V RETURN
+12V SWITCHED
ASSY 0012-30-9001
PL 1216-00-9001
SCHEMATIC B1190-02
CASE/CHASSIS INTERFACE
PCB ASSY.
ASSY 0012-00-9002
PL 1110-00-9003
SCHEMATIC B1190-01
P27
J27
P26
J26
CHASSIS/OPTION BD.
INTERFACE PCB ASSY.
ASSY 0012-10-9002
PL 1110-00-9002
SCHEMATIC B1190-01
J10
P10
CARD READER
OPTION PCB ASSY.
ASSY 0012-20-9002
PL 1110-00-9001
SCHEMATIC D1390-01
P5
REV
2 CE
8 MRD
9 TPA
11 NO
13 N1
15 N2
21 TPB
24 MA0
26 MA1
28 MA2
29 D7
30 MA3
31 D6
32 MA4
33 D5
34 MA5
35 D4
36 MA6
37 D3
38 MA7
39 D2
40 +5V
41 D1
42 +5V
43 D0
47 GND
48 GND
49 CLK
TO J5 OF 1865
+12V RETURN
+12 V
N/C
TO P18 OF 1865
J18
ALL REMAINING PINS - NO CONNECTION

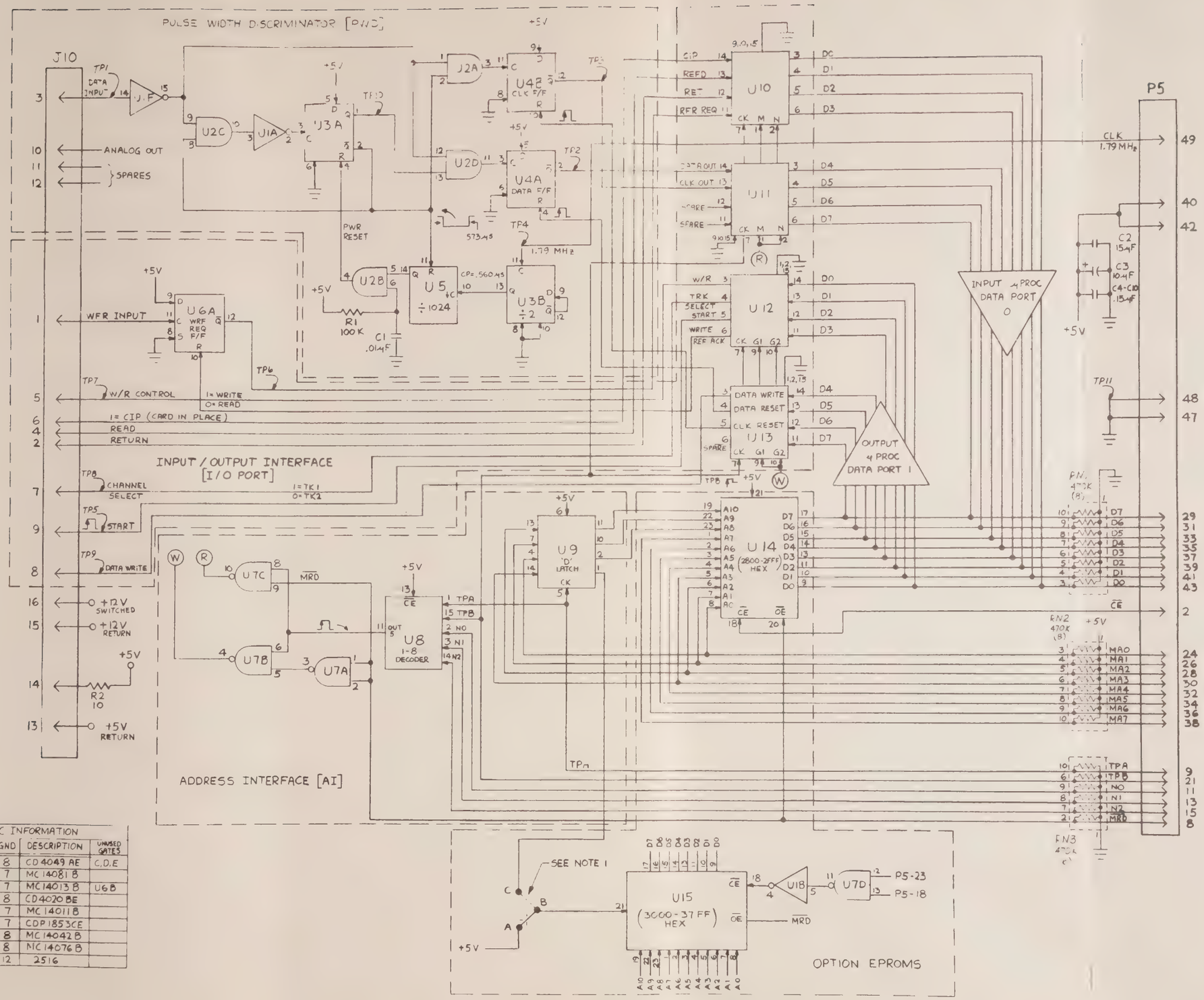
CRW-1 / 1865
INTERFACE

REV



# CRW-1 / 1865
# CARD READER OPTION BOARD

REV A



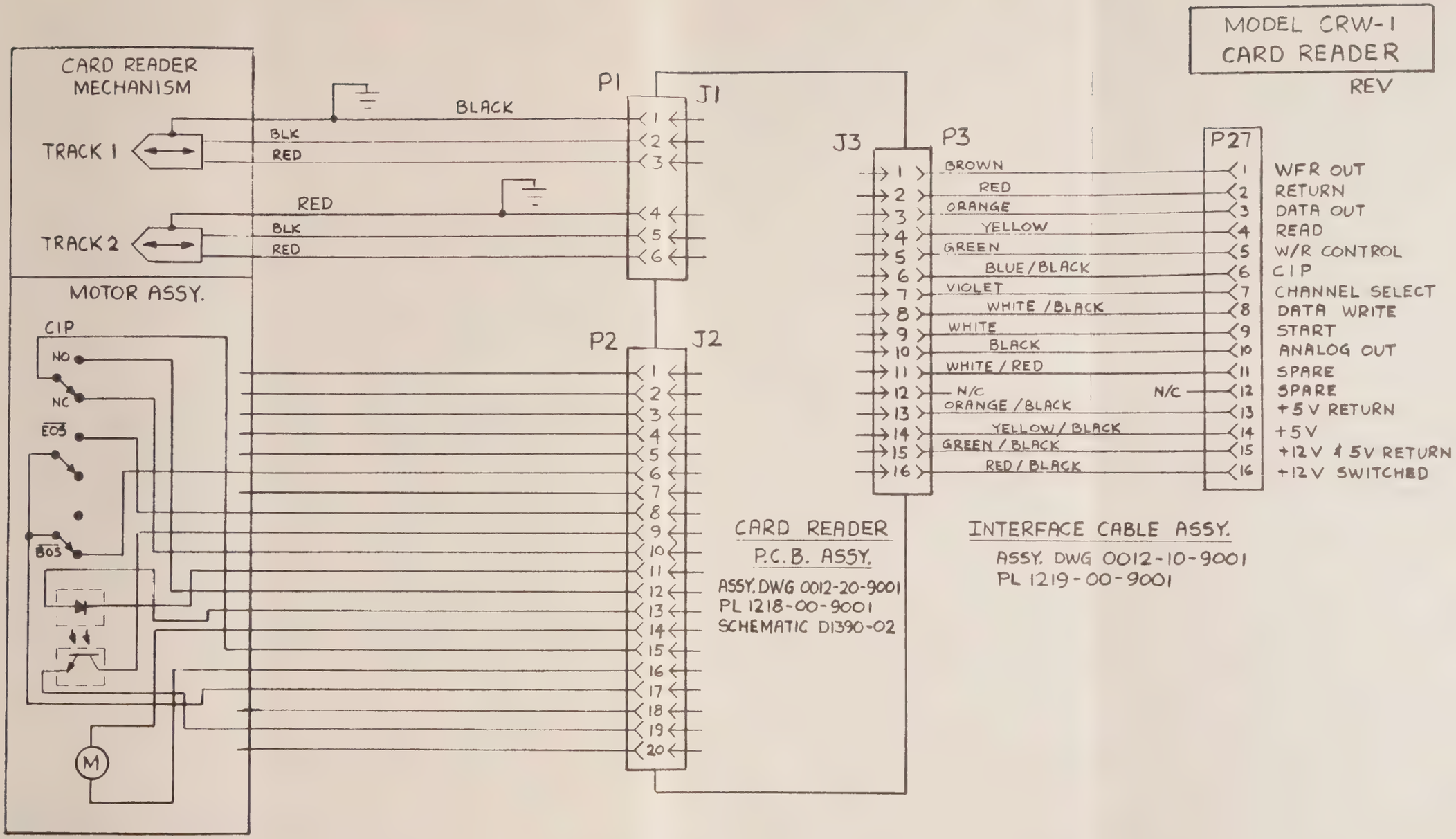

NOTES:

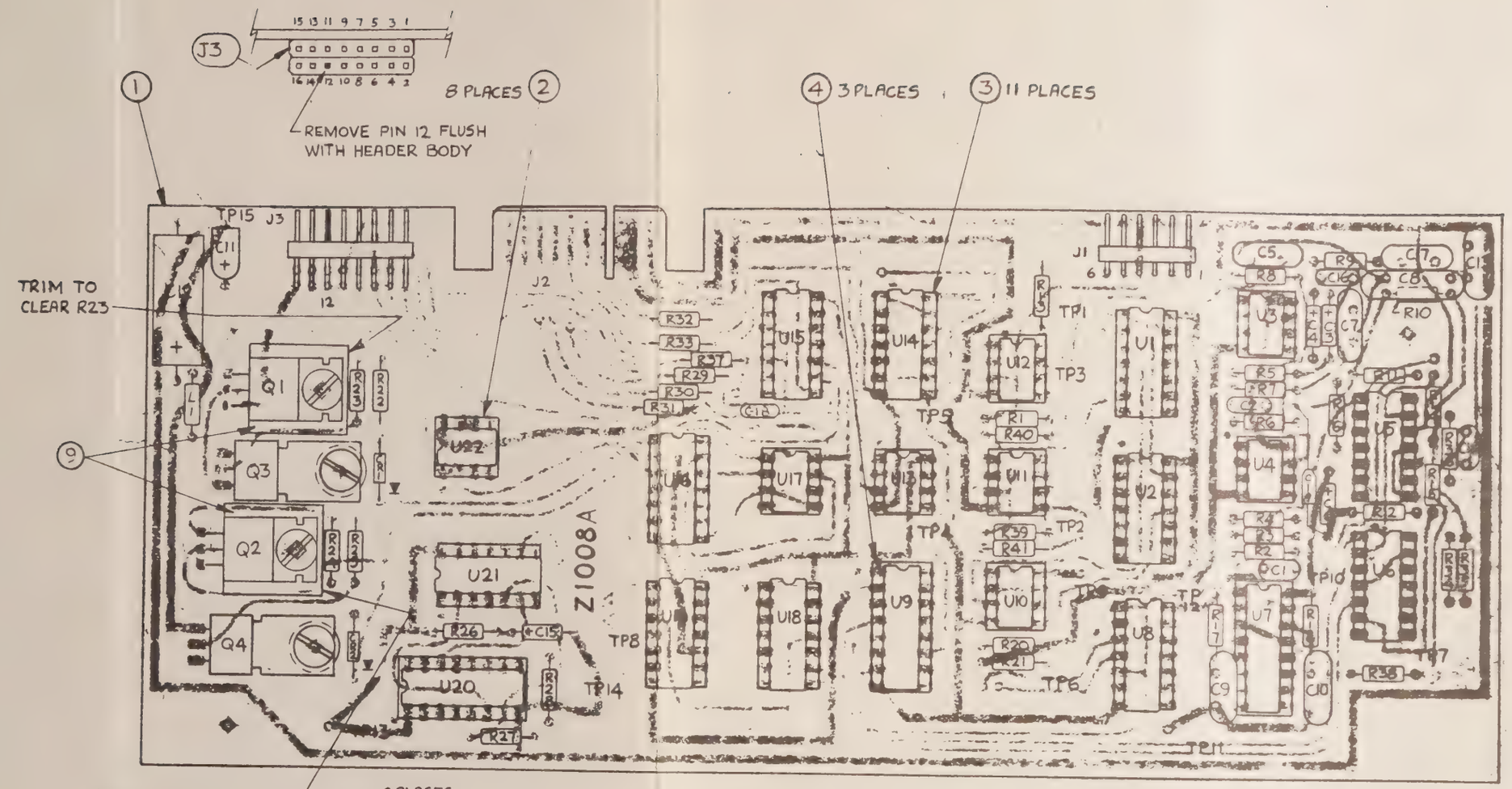
1. FOR FUTURE EXPANSION USE EPROM 2732 (4K × 8) DEVICE. INTERRUPT CONNECTION BETWEEN A & B AND JUMPER FROM B TO C.

| REFERENCE DESIGNATIONS | |
|---|---|
| LAST USED | NOT USED |
| C10 | |
| J10 | J1 THRU J9 |
| P5 | P1 THRU P4 |
| R2 | |
| RN3 | |
| TP11 | |
| U15 | |

IC INFORMATION

| IC NO. | +5V | GND | DESCRIPTION | UNUSED GATES |
|---|---|---|---|---|
| U1 | 1 | 8 | CD4049 AE | C,D,E |
| U2 | 14 | 7 | MC14081B | |
| U3,4,6 | 14 | 7 | MC14013B | U6B |
| U5 | 16 | 8 | CD4020BE | |
| | 14 | 7 | MC14011B | |
| | 16 | 7 | CDP1853CE | |
| U9 | 16 | 8 | MC14042B | |
| U10,11,12,13 | 16 | 8 | MC14076B | |
| U14,15 | 24 | 12 | 2516 | |


MODEL CRW-1
CARD READER
REV
CARD READER
MECHANISM
TRACK 1
TRACK 2
BLACK
BLK
RED
RED
BLK
RED
P1
J1
P2
J2
MOTOR ASSY.
CIP
NO
NC
EOS
BOS
M
J3
P3
P27
BROWN
RED
ORANGE
YELLOW
GREEN
BLUE/BLACK
VIOLET
WHITE /BLACK
WHITE
BLACK
WHITE / RED
N/C
ORANGE /BLACK
YELLOW/ BLACK
GREEN / BLACK
RED / BLACK
N/C
WFR OUT
RETURN
DATA OUT
READ
W/R CONTROL
CIP
CHANNEL SELECT
DATA WRITE
START
ANALOG OUT
SPARE
SPARE
+5V RETURN
+5V
+12V & 5V RETURN
+12V SWITCHED
CARD READER
P.C.B. ASSY.
ASSY. DWG 0012-20-9001
PL 1218-00-9001
SCHEMATIC D1390-02
INTERFACE CABLE ASSY.
ASSY. DWG 0012-10-9001
PL 1219-00-9001




NOTES:

1. MATERIAL: SEE PL 1218-00-9001

| REVISIONS | | | WAVETEK |
|---|---|---|---|
| | ECN'S | BY | |
| A | C028 | BA | ASSEMBLY, PRINTED CIRCUIT BOARD, CARD READER |
| B | 1621 | WH | |
| C | D097 | WP | DRAWN BY: G.L. RADER; DATE: 10-15-80; NUMBER: 0012-20-9001 |
| D | | | |
| E | | | APP'D: [illegible] 1-5-81 |

# MODEL CRW-1 CARD READER BOARD

REV A

CARD READER MECHANISM (REF. ONLY)

MOTOR ASSY. (REF. ONLY)

OPTICAL COUPLER

TRACK & OPERATION SELECT CIRCUITRY

READ CIRCUITRY

PEAK DETECTOR

MOTOR CONTROL CIRCUITRY

WRITE CIRCUITRY

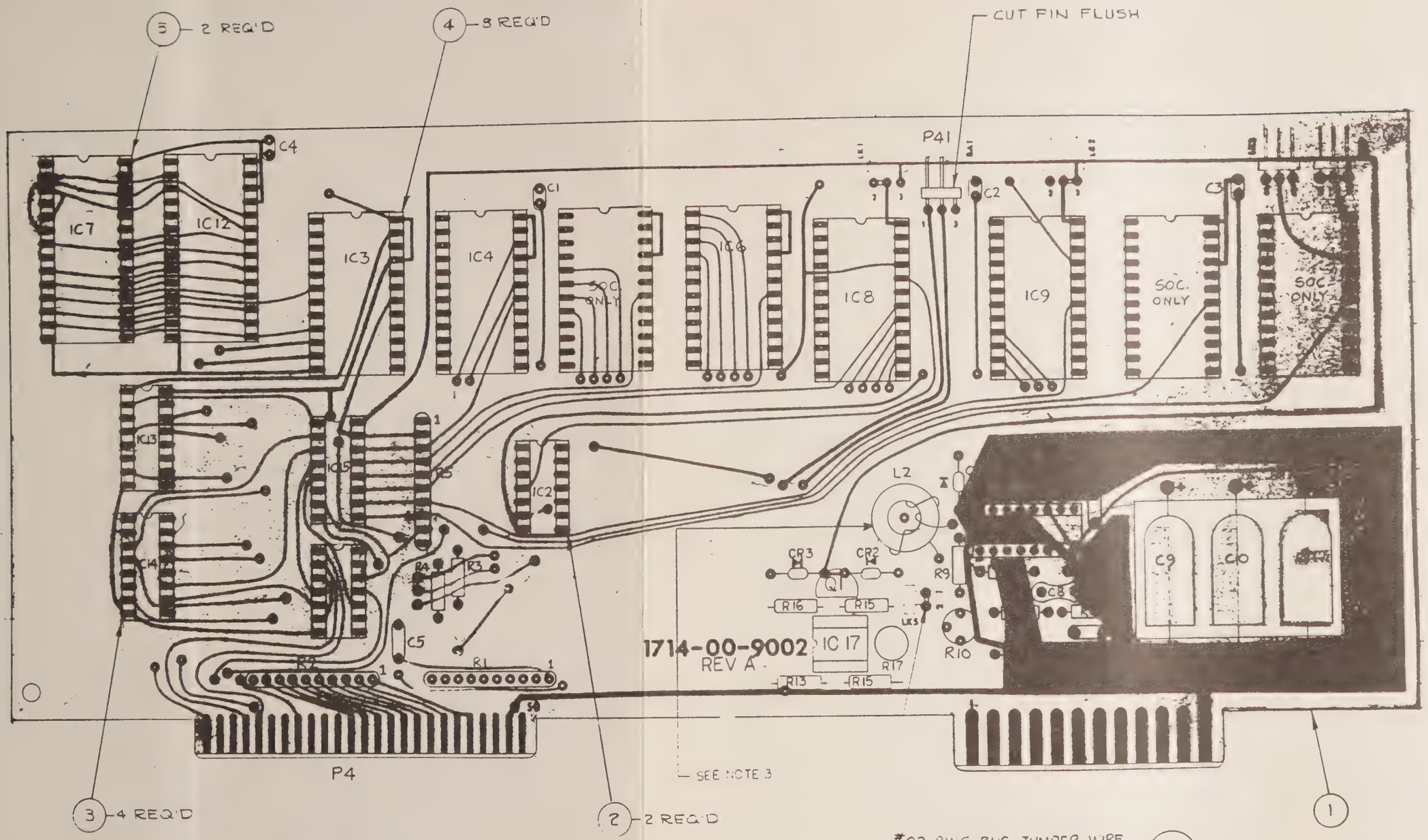
| J3 | |
|---|---|
| 3 | DATA OUT |
| 16 | +12 V SWITCHED (SW) |
| 15 | +12V & 5V RETURN |
| 10 | ANALOG OUT |
| 7 | CHANNEL SELECT |
| 5 | W/R CONTROL |
| 14 | +5V |
| 13 | +5 V RETURN |
| 4 | READ |
| 2 | RETURN |
| 11, 12 | SPARE |
| 9 | START |
| 6 | CIP |
| 1 | WFR OUT |
| 8 | DATA WRITE |

## IC INFORMATION

| IC | +VD(12V,SW) | +5V | GND | DESCRIPTION | UNUSED GATES | IC NO. | +VD(12V,SW) | +5V | GND | DESCRIPTION | UNUSED GATES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U1, 2 | 14 | | 7 | MC14066BCN | | U18 | | 14 | 7 | MC14013B | |
| U3, 4 | 8 | | 4 | CA3240AE | | U19 | | 14 | 7 | CD4085BE | B |
| U5 | 3 | | 12 | CA339G | | U20 | | | | CD4049AE | |
| U6, 8, 14, 15, 16 | | 14 | 7 | MC14011B | | U21 | 14 | | 7 | CD4023BE | C |
| U7 | | 16 | 8 | MC14538B | | | | | | | |
| U9 | | 1 | 8 | CD4049AE | | | | | | | |
| U10, 11, 12, 13, 17, 22 | | 8 | 4 | CD4011BE | U13B | | | | | | |

| REF DESIG. | |
|---|---|
| LAST USED | NOT USED |
| C17 | |
| CR2 | |
| J3 | |
| Q4 | |
| R41 | |
| TP15 | |
| U22 | |
| | |

UNUSED GATES




— #22 AWG BUS JUMPER WIRE
# 6010-92-2000, 3 PLACES
(LK1, LK2 & LK5)

NOTES:

1. FOR PARTS LIST SEE 1110-40-9010
2. SCALE 2:1
3. CENTER L1 WITH DOT ON BOARD AND MOUNT WITH HOT MELT GLUE.

| REVISIONS | | | WAVETEK |
|---|---|---|---|
| | ECN'S | BY | |
| A | D 008 | DLR | ASSY. DWG, P.C. BOARD, STACKER/ AVERAGER/ |
| B | | | |
| C | " | " | DRAWN BY — DATE |
| D | " | " | N. GAY — 2-3-82 |
| E | " | " | APP'D — |

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVED |
| | – | RELEASED TO PROD. ERN C024 | 5-28-82 | |
| | A | D-008 ADD BATTERY SENSING | 9-2-82 | D.J.W. |
| | B | D-036 ROM LOADING | 2 18 83 | DLR |
| B-7 | C | D-043 SCH CHANGE | 3 31 83 | DLR |
| C 3 | D | ECN D-087 ADDED PIN 25&4 | 10-31-83 | W.P |

| POWER CHART | | | | |
|---|---|---|---|---|
| IC # | DEVICE | +5V | $V_B$ | GND |
| 1 | CD4011 | – | 14 | 7 |
| 2 | CD4041 | 14 | – | 7 |
| 3,4,6 | TMS2516 | 24 | – | 12 |
| 5 | NOT USED | 24 | – | 12 |
| 7,12 | CDP1855 | 28 | – | 14 |
| 8,9 | TC5517APL | 24* | 24* | 12 |
| 10 | NOT USED | 24 | – | 12 |
| 11 | NOT USED | 24* | 24* | 12 |
| 13,14 | CD4042 | 16 | – | 8 |
| 15 | 74SL138 | – | 16 | 8 |
| 16 | TL494 | – | – | – |
| 17 | ICL8212 | – | 8 | 5 |

* PROGRAM OPTION
$V_B$ = BATTERY BACKUP

| PROGRAMMING MATRIX | | | | | | |
|---|---|---|---|---|---|---|
| IC # | LK1 | LK2 | LK3 | LK4 | *LK5 | PROGRAM FUNCTION |
| 8 | 1-2 | – | – | – | – | RAM |
| | 1-3 | – | – | – | 1-2 | RAM |
| | – | 1-2 | – | – | – | RAM |
| | – | 1-3 | – | – | 1-2 | RAM |
| 11 | – | – | 1-2 | 1-2 | – | ROM ONLY |
| 11 (REF. ONLY) | – | – | 1-3 | 1-2 | – | RAM |
| 11 | – | – | 1-3 | 1-3 | 1-2 | RAM |

* LK5 FOR BATTERY BACKUP

| PARTS LIST | | | |
|---|---|---|---|
| QTY REQD | CODE IDENT | PART OR IDENTIFYING NO. | NOMENCLATURE OR DESCRIPTION |

| | |
|---|---|
| 1110-40-9010 | ME-1 |
| NEXT ASSY | USED ON |
| APPLICATION | |

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS ± —, DECIMALS XX ± —, XXX ± —, ANGLES ± —
MATERIAL —
FINISH —
DO NOT SCALE DRAWING

CONTRACT NO.

| APPROVALS | DATE |
|---|---|
| DRAWN G.L. RADER | 3-16-82 |
| CHECKED | 5-28-82 |

WAVETEK INDIANA, INC.

# SCHEMATIC DIAGRAM, STACKER/AVERAGER/NORMALIZER PCB

| SIZE | CODE IDENT NO. | DRAWING NO. |
|---|---|---|
| D | 34280 | 0414-30-9008 |

SCALE — SHEET 1 OF 1

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